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THE

BRITISH CULTIVATOR

AND

AGRICULTURAL REVIEW.

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THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

JANUARY—1844.

INTRODUCTION.

Most men are apt to indulge in that species of literary luxury which provides for them the essence, as it were, of books or the cream of a subject, leaving the drudgery of wading through folios of dry and uninteresting arguments, or *ad captandum* sophisms, to those book-worms, who are never satisfied until they have gone page by page through a new work, and hunted an author to his last flourish; or those booksellers' hacks, y'clept reviewers, whose duty it is to pronounce for their employers (and for the public too) judgment upon every sheet of paper spoilt by printers' ink.

This being the case with men generally, why should it not be so with Farmers particularly? Why should they, whose time is so much occupied with out of doors' employment, be debarred the advantages, so abundantly provided for the rest of mankind? No reason has presented itself to us why this should be;—indeed the reason seems to lie on the other side, for we think it but just, that they should have every appliance afforded them, and every path made straight;—that they should be guarded against practices, however plausible, or books, however ably written, which may tend only to lead them astray—that, in short, a mentor should be constantly at hand to warn them to their advantage, in something like the following strain:—"Don't mind such and such a book, it is merely written to puff a certain manure, or implement, or breed of stock; but, on the other hand, do mind and read attentively such another book, for it is indited by one who has no *earthly motive* or leading *you astray—nothing to* puff into a short-lived but mischievous notoriety—nothing to gain by your loss—you may, therefore, place implicit confidence in him and in all he suggests—you may receive his assertions, as to the results of experiments, and the value of implements or manures, without doubt, and act upon them with safety."

This sort of mentor we claim our proposed work to be considered, and though feeling a degree of incompetency to the task; yet, such is the necessity at the present day, for some landmark, for the Agricultural reader, and so great is the want of a medium through which the Agricultural writer may make his works better known than they can possibly be by mere advertisement, that we have determined upon bringing out the present work. Should our effort to prove useful be crowned with success, we shall, in after life, mark with a red letter the day when we established *The British Cultivator*. We may, in addressing our brethren of the plough, conclude our short introduction by observing, that each number will contain one or more papers on practical Agriculture, from the pens of writers known and appreciated, besides notices of the various new books and implements as they come out, and a copious review of the prospects of the British farmer; for in these days of restless change, it is fit that his social position should be as carefully attended to as his mental advancement. We shall therefore, though eschewing party politics, watch closely all legislative measures by which he may be affected; and mark with a hearty condemnation any projected law which will, in our opinion, tend to his disadvantage, no matter from what party it emanates.

IRISH AGRICULTURE.

It is with feelings of sincere gratification we witness the rapid advances Agricul-ural improvement makes in the sister kingdom. Scarcely a week passes that we do not receive the most flattering assurances that Ireland is not yet lost—that her splendid soils are becoming daily more and more appreciated, and her internal resources considerably increased—that the too much defamed landlords of Ireland are becoming awake to the true interests of heir tenants—and that all are not spend-hrift absentees or grinding mercenary middle-men.

We have often occasion to notice the proceedings of the various Agricultural Societies of Ireland—that these bodies are calculated to do great good farmers are now pretty generally aware; but they must be supported liberally, and above all things, the supporters of them should be punctual n the payment of their subscriptions, else he Committees of management cannot possibly effect all the good which may be done, nor can the successful competitors hemselves feel sure of receiving the rewards they may be justly entitled to. All his in bad times is bad enough, any money payments when money is scarce are with difficulty made, but those subscriptions should be looked upon as debts of honor and in that light held sacred.

From the contemplation of the arrange-ments of these societies, it is with increased pleasure we turn to those made by individual land-owners for the promotion of Agricultural science amongst heir tenants;—following the example of England in this respect many Irish land-ords have arranged competitions amongst heir tenants for prizes which they them-elves provide, and which are in most cases enhanced in value by being personally presented to the winners by the hands of the really noble men, (whatever their adventitious rank), who supply them.

We are pleased to see the occupiers of the small farms, into which the largest estates in Ireland are commonly divided, come forward upon these occasions with the results of their improvements in cultivation; shewing very clearly that such improvements are carried out in the best methods, and that the results of them are carefully noted. In this respect the small occupiers in the improving districts of Ireland are decidedly in advance of the same class of Farmers in England, generally speaking. We regret being forced into this admission, but that it is true the following statement, taken from the report of Ballinasloe Union Agricultural Society, will shew:—

> This year we have 702 turnip-growers, 32 of mangel wurtzel, 275 of rape, 454 of vetches, and 296 of clover and grass, exhibiting an increase over last year of 227 turnip-growers, 17 of mangel wurtzel, 131 of rape, 159 of vetches, and 109 clover and grass; and the extra breadth of ground, under these crops, is fully proportioned to the extra number who have sown them. We have an increase of 34 acres of turnips, 3 acres of mangel wurtzel, 156 acres of rape, 11 acres of vetches, and 146 acres of clover and grass, giving a total increase of green crops, over last year, of 351 acres: and the total breadth of ground under the different green crops, this year, is as follows—viz.: under turnips, 46 acres; under mangel wurtzel, 5 acres; under rape, 306 acres; under vetches, 58 acres; and under clover and grass, 363 acres, giving a total breadth of ground under green crops, of 880 acres, adequate to support, throughout the year, I dare say, fully 2000 head of black cattle. Of furrow-draining there are executed, since November last, 17,484 Irish perches, calculated to put a drain in every perch over an extent of 109 Irish acres.

To prove that the above has reference to small farms we may observe that 58 acres of vetches for 454 growers, and 46 acres of turnips amongst 702 growers, would give but a very small quantity to each—too small by much for farms of any extent beyond the very smallest.

Ireland is emulous of distinction in Agriculture—Scotland has nothing to boast of either in soil or climate; yet the superiority of Scotch farming to that of Ireland (aye, and of great part of England too) is most manifest; the cause must be sought for in the peculiar characteristic of Scotch people, which fits them in an extraordinary degree for the patient toil and long-looked for returns of Agriculture. An Irishman would sow carelessly in the hope that he might reap in a single day—his sanguine temperament and quick perception fits him for any employment where the main dependance is upon personal address, or the chances of commercial speculations—whilst a Scotchman, on the other hand, sows most carefully and waits patiently until he shall reap, and is better satisfied with the prospect of a sure return, though at a distant day, than the risk attendant upon a speculation, however plausible. How far education and early habits will tend to assimilate the national characteristics of the two, time will shew—hitherto Scotland has had advantages in these respects which Ireland has been deprived of; now, however, a better day is dawning upon her,—with her board of education,—her Agricultural schools, and, above all, her Scotch Agriculturists scattered over the country, either through the aid of the societies we have before alluded to, or by the liberality of individual landlords,(to whom be all honor in the name of the people they are assisting) it is impossible to prognosticate her ultimate success in the course upon which she has but just started; like the tortoise in the fable, though late in making an effort, she may yet win—she has abundance of labour, but little dearer than upon the continent, and a soil and climate fit for any crop suitable to the temperate zone—she is, therefore, with the improvement she is making, well entered for the free-trade stake, should such race be started.

◆

THE speech of Earl Spencer, at Northampton, has created, as it was very sure to do, no small share of attention amongst agriculturists of all classes. That certain peers, of large property, should identify themselves with the Anti-Corn-Law movement we can well understand when that property which mainly ministers to their state, shall be found to extend itself into the very heart of London, or of the large manufacturing towns. My Lord may have ten thousand good reasons for wishing prosperity to the farmer, but he may at the same time have twenty thousand equally cogent for desiring to see the manufacturers prosper. That such men should uphold the free-trade movement of the Manchester cotton spinners does not surprise us; but, that Lord Spencer, who has truly, we believe, no resource but in his broad acres, should have imbibed the poison of Newhall Buildings, does indeed astonish us. Oh! but, say some of his Lordship's apologists, his Lordship thinks that instead of bringing our prices *down* to the continental level, a repeal of the corn-laws will bring the continental prices *up* to the British standard. Such we know are really his Lordship's expressed opinions, but a little examination will show how very far from being well grounded they are. Let any man cast his eye over the map of Europe, directing his attention to the great corn-producing countries of the North, and he will then at once perceive how Russia, Poland, and Northern Germany can at once from their vast territorial extent overwhelm the British Isles in *any* competition from the soil. As to the increasing capability of those countries to compete with us acre for acre, from the map, let us carry our enquirer to the agricultural tour of Professor Johnston, published in the *Transactions of the Royal Agricultural Society:* he will there find how rapidly the improvements of agriculture are progressing in some of the countries named—how the cheapness of soil and labour will tend to facilitate the objects of the landowners of those countries, and how little stimulous is necessary to induce them to extend their cultivation until they shall have a production so large, and which will be poured upon us under a free-trade system, at prices so low as to leave our labourers and farmers no chance of safety but in flight, and other lands will derive the benefit of that patient endurance and toil—that skill and capital which ought not to be driven from our own shores. Were the circumstances under which we find ourselves geographically placed materially altered—was the extent of country, from which our supplies of foreign grain will be drawn, considerably circumscribed, whilst our own territory was as much extended, the result anticipated by Lord Spencer might possibly arise; but where is the commercial axiom which predicates that an almost unlimited supply shall raise up prices—or in what school is it taught that the prices of small producers or small holders, of any article, shall, in any degree, regulate those of large competitors in the articles so produced or held. Do the Ashworths, and Greggs, and Cobdens, and the hundred manufacturers of their class, raise the prices of the thousand other manufacturers of less note, but who bring collectively a greater amount of goods to the market? or do the thousand bring down the prices of the hundred? or will, in the case before us, the wheat growers of Britain, producing a proportion of 100 to 1000—*can* they raise the continental prices to our level? That the price of foreign corn will eventually rise under a free-trade system we have no doubt, but some time will elapse first, when it will be with wheat as it has already been with flax. The present race of British farmers having been ruined and ceasing to grow wheat, the Polish Counts and German Barons, finding they have us at their mercy and the game in their own hands, will make the most of it, and wring from the British public prices for their wheat, as they now do for flax, higher than it can be grown for at home. That either Lord Spencer or the Anti-corn-law League are under a weak delusion, or designedly propagate a wicked falsehood, no man can doubt, seeing that the conclusions of both cannot possibly be correct, differing so widely as they do from each other. A free-trade in corn, says Lord Spencer, will bring the prices of foreign grain up to our level instead of dragging down our prices to those of foreign growers. A free-trade in corn, says the Anti-corn-law League, will give us cheap bread and a large loaf instead of a small one. Both these results cannot possibly happen; which then is the true one, and which of the propounders of them are honest in their convictions?

Whilst upon this subject, let us now remind the British farmers that the corn-law question is not one of mere party politics,—it is not whether a fixed duty, as advocated by the whigs, is to be the future law, or whether the sliding scale of the tories is to be maintained; it is a broad question of international law, affecting alike whig and tory, churchman and dissenter, whose living is dependent upon the soil. It is absurd then to call the discussion of this very important question *politics;* and yet such is the cry whenever the subject is broached at the anniversary meetings of agricultural societies. The farmers are attacked as a body, and measures sought, which, in the opinion of the most intelligent of their class, will bring ruin irretrievably amongst them; and yet, when these measures are proposed to be discussed, some men who, like Lord Spencer, are fatuous enough to believe that "the effect of a free-trade in corn must be to raise the continental price to our level, not to reduce ours to theirs," immediately pronounce the discussion political and an infringement of the rules of the society. Why, any disquisition upon the means of bettering the condition of the labouring classes or of the farmers themselves may be considered political by the same rule, and denounced as such, and would really and in truth be politics to the same extent. The question is not altogether one of mere rent: a few shillings more or less, per acre, of rent will be miserably short of the difference a few shillings, in the price of a bushel of wheat, will make. If it could be in any degree looked upon as a question of rent, then indeed it might be safely left in the hands of the landlords, who, seeing it to be so, would probably take some steps to stem the current of miserable sophisms with which the League inundates the country; but as it is a question not more vital to the interests of landlord than it is to those of the tenant farmer, nor more dangerous to the farmer than it is to the farm labourer, or indeed, in that extended sense in which we are bound to consider it, viz. that of *a general free trade*, more dangerous to the farm labourer than it is to the artisan who cannot compete in price with his co-labourer on the Continent; and this too, not because of the price of bread alone, but because of the position in which Britain is placed, in reference to its public burthens; it is to be expected that not only Agriculturists, but all the industrial classes, will try every means to avert the evil which threatens them. It is fit that this one fact should be ever before us, viz., *That whilst our heavy debt hangs over us, and with our expensive executive, we cannot become a cheap country, and be honest.* We must, to be rid of our liabilities, and to enable us to compete with our cheaper neighbours, "repudiate,"—God forbid.

THE CULTURE OF WASTE LANDS IN SURREY.

(*From the Farmers' Herald.*)

I beg to call the attention of your readers to the fact of a successful cultivation of heath lands lately broken up and put into a state of productiveness near the Farnborough Station. This is by no means a solitary instance of a fair prospective return from a judicious outlay on the ocean of sand which exists from Chertsey to Farnham, from Egham to Hartfordbridge, and from Old Windsor to near Guildford. That such an extent of nearly unproductiveness (as to human food) should exist within 20 or 30 miles of London, is much to be wondered at, particularly as there has existed for the past forty years, a navigable canal running through the midst of it, and now a railway, available for the transport of permanent mineral dressings, such as clay and lime; and there are prompt fertilizers to be had at every wharf or station of rail or canal. It would appear that persons of capital are more disposed to venture their sums in foreign speculations, rather than those at home; hence we have well supported Australian Agricultural Societies, and those for working the mines in Mexico and Peru. It requires but three or four active men with a little capital to form a Company, and take a thousand or ten thousand acres of this easily cultivated land, availing themselves of the scientific principles of culture now so much better understood, than they were a few years ago; indeed it is now well known what particularly fertilizers are required for certain soils and certain crops, and so exact is the analysis of soils and crops, that it is known what is the food required, particularly for the straw, the grain, the bulb, of the haulm, agreeable to the mineral nature of the soil.

Instances could be cited of a crop of potatoes, on the sand so judiciously managed as to pay a profit in one year, sufficient to purchase the freehold, fence and trench the land: the same could be done again.

Of the extent of land traced above, in the North-West of Surrey, and extending into Hants and Berks, it may be computed that one part in five only of surface is in culture, the waste offering many valleys, that would be productive land in a very few years if scientifically managed. A spot could be named where a parish have availed themselves of the law to enclose 50 acres of land around their poor-house, and this has been so well managed as to form water meadows, and now let for the benefit of the parish at £2 per acre. The law does not allow more to be enclosed, or more would have been cultivated, and the unemployed labour of the parish beneficially applied during the winter and leisure months.

Of the lands that have been inclosed, isolated spots could be pointed out where luxuriance reigns, in the midst of desolate waste—an oasis in the desert: yet there are large plots inclosed and awarded to previously large landholders, who have fenced and banked, and often planted fir trees, giving no return in yearly labour to the unemployed; and thousands of acres, remain as before the inclosure—a heath, altered only by the same being made a private instead of a public waste. The poor labourer is debarred from taking firing, or walking over the enclosure, even if it be the nearest way to his work, or in the line of an ancient pathway. The owners of great breadths of waste land, should be bound either to cultivate some portion or allow others to do so at a trifling rent. When the feudal lords of the soil owned a large extent of country as hunting ground, facilities were not offered for cultivating it, as at present; but now one acre is made to produce more human food, than eight hundred acres of hunting ground formerly did. Why not bring to use the unemployed capital of the country, expend it at home, and enrich our mother land, making the improvements available to the wants of employ in overpopulated districts.

G. J. L.

Barossa Cottage, Bagshot,
Dec. 1, 1843.

By the kind permission of the Author, we re-print the following from the second volume of the Transactions of the Royal Agricultural Society.—E. B. C.

PRIZE ESSAY.

ON EARLY SPRING FEED.

BY MR. M. MILBURN.

The increased quantity of stock which the farmer is enabled to keep by the introduction and successful cultivation of green crops, requires his best attention to furnish them with a constant supply of green food, especially such portion of his stock as are not intended for fattening. The use of the artificial grasses on arable land in summer, and of turnips in the winter, has been brought as near perfection as may be; but it is quite certain that the wants of the sheep and cattle, from the time when the turnips are consumed to that when the grasses become available, are not equally well provided for. In order, as far as possible, to remedy this deficiency, recourse has been had to the cultivation of turnips which long retain their nutritious qualities, and the swede has been truly invaluable for this purpose. But while these roots have furnished very palatable and nutritious food for one portion of the stock, they have altogether failed for the young—the principal object of the breeder's anxiety. For as well as having an abundant flow of milk from the dam, every breeder is desirous of training the young stock to help themselves as soon as there is food of a proper quality available for them; and if the young lambs in particular are kept from green food until they are turned into the gross clover leys with their dams, their is great danger that a portion of them will be lost. It is generally desirable to keep the clover leys free at least until May, and long before that time, the young stock should be trained to eat a considerable portion of green food.

With the view of supplying this want, several crops have been cultivated for early feed in the spring, with greater or less success, and under greater or less disadvantage, according to circumstances; but the farmer who occupies a poor soil is, more than any other, under the necessity of grappling with the difficulties he may have to contend with; for lateness of vegetation and certain destruction of his crops of grass are sure to be the consequence if he break into them before they attain a proper degree of maturation, and yet he has also the greatest difficulties to surmount in cultivating any spring crop.

The farmer, on the other hand, who cultivates rich fertile land where he has a deep alluvial soil, growing every crop luxuriantly can easily free a pasture early in the autumn, and have it full of young grass as early as he may require it, and knows nothing of the difficulties which attend his less favoured neighbour.

The avidity with which any new variety of grass or plant promising early growth is tried, indicates how desirable a point it is to secure an early supply of succulent food. At one time it was hoped that this desideratum was discovered in the crimson trefoil. The writer of this paper made a trial of it at its first introduction. It was sown upon a wheat stubble, on land intended for turnips, and got in the first week of September, after one ploughing and a very slight dressing of compost. The greatest part of it went off by the frosts during winter—one plot was eaten with the ewes and lambs in April, but the produce was so trifling as to be a mere mockery to the animals. The remainder was allowed to remain, to see whether it would afterwards be available. It was not broken into until the latter end of May; indeed after the sheep were shorn, and was so thin and stunted as to be scarcely worth the trouble of cultivation. Owing to to the lateness of the season when the land was broken up, the turnips on the trifolium piece failed;—the barley which succeeded, was overrun with weeds, and the red clover from this too rapid succession of the *trifoliums*, was unusually bad.

The writer was scarcely satisfied with these experiments, and imagined he had met with foreign-grown seed too tender for our country, and determined to endeavour to procure English seed. The introducer of it, J. Foaker, Fsq., very kindly sent him a small parcel for a trial; but though very carefully tried under the most advantageous circumstances, he had to pronounce it most decidedly unsuccessful.

Some farmers tell us of the success of feeding the ewes at yearning time with the young *furze* portions of which they annually burn, to have it of the requisite growth. As this, however, can apply only to sheep of constitutions peculiarly strong, it is scarcely worth notice.

The winter tare is one of the most valuable esculents for stock in possession of the cultivator, and affords the greatest bulk of nutriment of any cultivated green crop, turnips perhaps excepted, and is relished at all seasons and by every kind of stock. It is sometimes resorted to for depasturation in the spring, with a view to subsequent soiling, but it is, after all, rather a *summer* than a *spring* crop; and it is more than problematical, that the injury done to the crop by spring feeding upon it, is greater than the amount of spring food this obtained. If it be worth while to have a supply of early feed, it is worth while clearly to provide a crop specially for that purpose. As a *spring* crop, according to the writer's observation and experience, it is decidedly inferior to other cultivated plants.

The writer of this paper has seen rye-grass very successfully cultivated as early spring feed sown alone. It requires to be sown a whole year before it is fit to be consume, and thus lies open to the objection of interfering with good husbandry, particularly the hoeing of the corn crop, with which it is sown a whole year before, as well as preventing the ploughing of the land for the same period; thus encouraging the growth of quitch and weeds, while the adhesion of the soil which it produces, and the accumulation of roots, &c., very materially prevent its kindly working for the crop intended to follow.

The above remarks are made on the supposition that the rye-grass is introduced as a half-crop, for it must be quite clear to every practical farmer, that there is no sound practice in throwing away a whole year's crop for the sake of one month's feed in the spring, valuable as it undoubtedly is. The trials above mentioned, which the writer has seen, have been with Pacey's rye-grass, and though the Italian rye-grass would furnish a greater portion of food, supposing it tillered as much as Pacey's, which is not the case, yet it is liable to all the above objections, and from the observation of the writer, it appears exceedingly doubtful, whether it will bear an equal degree of frost to Pacey's.

It is the intention of the writer, now to state his experience, and offer his recommendation of a crop embracing all the advantages of the preceding, and several peculiar to itself. It is that of *rye*, eaten the early stages of its growth. It is intended to intervene between the last crop of the four-course system, which is generally wheat, and to be eaten, and the land ploughed and worked for a crop of turnips. It is equally applicable to all kinds of rotations, and would well precede a fallow or a crop of rape. As it is generally upon farms where the four-course system is pursued, that spring feed is most wanted, the writer will confine his observations to that rotation.

So soon as the wheat is cut in the autumn the plough should be set to work. This may be done even before it is carted, during the mornings of harvest. A single ploughing is given, and a very slight dressing of any kind of short manure. In some cases where the farmer lays on his manure in the autumn, for turnips the ensuing year, it might be better to lay it on before the ploughing. It should be remembered, that the slight dressing should not all be considered as given to the rye; in reality it becomes incorporated with the soil, and more intimately mixed with it than by the ordinary mode of spreading it on in the autumn, and any part of it which the rye may abstract, will be more than compensated by the droppings of the stock, and the carbonic acid gas which they evolve while consuming it; and which the soil more readily absorbs in the spring than in any other part of the year, evaporation going on at that period to a much smaller extent than in any other.

The seed must be sown upon the plough-seam broad-cast, at the rate of 2½ bushels per acre, and if of that year's growth, so much the better, as it is earlier, and more certain of germination. To this, half a peck or a peck of rapeseed per acre should be added; for although the latter is not able to stand a winter when the frost sets in early and severe, in many cases it will get sufficiently vigorous to resist any ordinary frost, and will much improve the feed in the spring. Should the rape not be sown, a peck of winter-tares per acre will improve the feed, or an additional peck of rye may be added; as a fuller bite and excited growth in its early stages will be secured—a point gained when wanted to depasture, but it might be injurious if sown for a crop.

In cultivating rye as feed, there need be no fears entertained of its becoming "winter proud," for as that only affects the ears of the corn, it is a circumstance of no importance, and therefore the earlier it is sown, the better able it is to resist the early frosts, as well as having a better cover and more feed when wanted. When sown, it should be thoroughly harrowed, but not rolled—a *double* with a pair of fine harrows is sufficient, and the surface-weeds should be gathered off, or the whole raked with the hand which will more efficiently cover the seed. An advantage is gained to the soil by this ploughing which cannot be obtained when the land is sown with the vetches. The annual weeds on the old surface are prevented from running to seed, and a new surface is exposed to the air and frost.

The rye will be fit for consuming the last week in March, or the first in April, or if allowed to remain until the middle of the latter month, it will carry a greater quantity of stock. After it is thoroughly eaten up, it should be freed, and by the first week in May will afford another pasture of fine young nutritious feed; at least, in ordinary seasons. It is bad management though sometimes practised, to allow the rye to remain uneaten until the seed-stalk begins to shoot, for in that case it will become much less palatable and useful. By consuming it young, it is much more valuable, and the succession crop equally so as the first.

The second crop being consumed, the plough must be put into operation, and the soil prepared for the succeeding crop; and the advantage of its cultivation, by no means a small one, is, that it interferes with no other crop. Perhaps a short digression may be pardoned on the subsequent preparation of the soil. The writer's practice is different to that of most other persons. Usually it is cross-ploughed a fortnight after its first ploughing. Time is thus lost, and the slices are cut into squares difficult to be acted upon by the harrow. The writer begins to harrow as soon as the newly turned up surface of the first ploughing is sufficiently dry. This brings up the lowest part of the roots of the weeds and closes the interstices of the furrows, so that the remains of vegetation being covered, deprived of air, and gathering moisture, begin to decompose. Instead of cross-ploughing, it it is again ploughed lengthways, and the old surface again brought up and harrowed. The weeds separate much more easily by this process, and much time and labour is saved; the same practice is applied to bastard fallows with the same good effects.

Rye has the decided advantage of being capable of resisting *any conceivable* degree of frost, and when even the hardy wheat is carried off by an ungenial season, it will escape injury, and even thrive. At this time, (Feb. 21, 1840), the writer has a plot growing for feed which would now afford more eating than almost any mixture of artificial grasses in the middle of April, and that on a thin light soil not worth more to rent than 25s. per acre. Some of the rape has succeeded, even in this season of incessant rain, which prevailed not only in the early stages of its growth, but ever since it was sown. It can bear so much and constant wet, worse even than frost.

The expense of this crop will be somewhere as under. Say per acre .—

	s.	d.
2½ bushels of rye at 4s. 6d.......	11	3
½ peck of rape	0	10½
	12	1½

It should be remembered, that this interferes with no operation of husbandry, and prevents no crop, so that no rent of land or other extras are to be reckoned—the ploughings would be nearly the same if the rye were not sown. Nothing is better relished by stock at the season when it is intended to be used; a guide by no means unsafe as to its nutritious qualities, and which is borne out by the condition of the stock feeding on it.

To recapitulate the advantages of its cultivation.

I. Provision of excellent green food is made at a season of the year when of all others it is most wanted.

II. It is produced without sacrificing any portion of the usual rotations pursued on a farm, and with little extra labour, nor does it interfere with the management of any preceding or succeeding crops.

III. It will grow on any soil, but is especially calculated for poor loose sand,* when every

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Note added by Lord Braybrooke.

* Sowing rye, and feeding it off in the spring, has long been practised in the neighbourhood of Saffron Walden, and is very useful when the turnip crop fails; but it does not answer on our poor light soils.

other green esculent is more or less uncertain.

IV. It will bear any degree of frost to which our climate is subject, and is sufficiently hardy to defy the effects of the coldest situations in the country, being there cultivated instead of wheat for a corn crop from necessity.

V. It is as inexpensive or more so than any grass or leguminous plant.

VI. It is readily consumed by stock, especially young animals.

VII. It improves rather than deteriorates the soil upon which it is grown.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.—Dec 6th.

LECTURES ON LIME AND CLAY.

Mr. Brande stated that having been called on at a short notice to deliver two Lectures before the Society, he had fixed upon the subject of Lime and Clay, as being the most important to Agriculturists. Chemistry had now advanced far enough to be of service to Agriculturists, and this had been remarkbly the case since the period in which minute analyses of plants had proved the necessity of attending not only to the bulk of materials of which the soil was composed, but to the substances which existed only in minute quantities. The ingredients of the soil may be divided, 1st, into those which form the bulk of the soil, as sand, clay, and lime; and 2dly, those particular substances which only enter into the composition of some soils, such as some of the salts of lime, soda potassa, iron, manganese, &c. Lime is a compound of a metal and oxygen, constituting an oxide. The metal is called Calcium, and is very difficult to obtain, but resembles in its general properties potassium, the metal of the alkali potassa. (Here the lecturer performed the experiment of burning potassium on water.) Like potassium, calcium has a strong affinity for oxygen, and on throwing it on water its oxygen is abstracted, and hydrogen in a state of combustion is set free. Lime has the properties of an alkali, and acts upon test paper in the same manner as potass and soda. It does not exist pure in a native state, but is always found combined with some acid. The acid with which it is most frequently combined is the carbonic acid, which consists of carbon and oxygen. (Carbon, or charcoal, was here burnt in oxygen to prove the formation of carbonic acid.) Carbonate of lime exists in the greatest abundance in the hills, rocks, and mountains of the globe, and is found in what the geologists call the primary, secondary, and tertiary rocks. In the first it is found in the form of marble, in the second in the form of limestone and chalk, and in the third in immense beds of shells. One of the properties of carbonate of lime is, that it effervesces with acids and gives off carbonic acid. If a soil containing carbonate of lime be sumitted to the action of dilute muriatic or sulphuric acid, and the whole bulk be weighed before and after the experiment, the quantity lost will indicate the quantity of carbonic acid present. Amongst many of the limestones other substances besides carbonate of lime are found. Thus the chalk at Brighton has been found to contain a great number of animalcules, and the consequence of their presence is that phosphate of lime exists in it also, which is a very important ingredient. The following is an analysis of such chalk:—

Carbonate of lime	98·57
Carbonate of magnesia	0·38
Phosphate of lime	0·11
Oxides of iron and manganese	0·14
Alumina and silica	0·80
	100·00

Chalk with the phosphate might be a valuable manure for chalk without it. In order to get the lime, the carbonic acid must be got rid of. This is effected by heat, as in limekilns. Fifty cwt. of carbonate of lime or chalk yields 28 cwt. of lime, and 22 cwt. of carbonic acid are driven off; lime consisting of 22 parts carbonic acid and 28 lime. Chalk should always be burned in a current of air, and the more moisture this contains the better. If lime is exposed to the atmosphere it absorbs water and carbonic acid, forming a hydrate of lime and a carbonate of lime. Such is the affinity of lime for water, that it will dry air exposed to its influence in a confined space. When water is poured on lime it is rapidly adsorbed and heat is given out, so that a match may be lighted by it. This is called *slaked lime.* When this lime is exposed to the air, it absorbs carbonic acid, which always exists in the air, and parts with its water. Lime is soluble in 700 times its weight of pure water, and in this state becomes the best possible test of the existence of carbonic acid. If shaken in a vessel with carbonic acid, whether from the combustion of a candle, the respiration of an animal, or the fermenting vat of a brewery the lime-water becomes milky from the presence of carbonate of lime. Carbonic acid may be proved to exist thus even in spring water and in the water of the river Thames. When carbonic acid is in excess in water it dissolves the chalk or carbonate of lime, and whilst under pressure the water holds it in solution, but the moment the carbonic acid is given off then the carbonate of lime falls down, and this is the origin of the stalactites and stalagmites of many of our caverns and springs. The uses of lime in agriculture are several: 1st, it decomposes vegetable matter, and converts it into what is called *humus*; 2d, it neutralises acids which may collect in the soil; 3d, it decomposes injurious salts of iron, forming an inert oxide of that metal; 4th, it decomposes the various aluminous compounds, setting free their elements; 5th, it decomposes bone manure, and thus produces ammonia, a very valuable constituent in soils. When ammonia comes in contact with potash it becomes converted into nitric acid, and thus are probably formed the large nitre beds of various parts of India; 6th, when it comes in contact with felspar it evolves the potash and the silica of these rocks, and thus produces the best possible soil for the growth of the gramineous plants which are known to require so much silica. One of the best tests for the presence of the lime is the oxalate of ammonia, which throws down in lime water a copious white precipitate, which is oxalate of lime. The presence of carbonate of lime alone may always be ascertained in rocks by its making a clear solution in weak acids, but if there is magnesia or other salts, then the solution becomes turbid.* It had been stated that lime is beneficial to plants, as they excrete from their roots an acid which, on coming in contact with the lime, is converted into a solutable salt, which is then taken up into the system of the plant. The sulphate and phosphate of lime are to be treated of in the next lecture. The lecture was illustrated by a number of judiciously-selected and well-performed experiments.

Dec. 7.—Mr. Brande commenced his second lecture by stating that previous to referring to the subject of clay, he should say a few words on the sulphate and phosphate of lime. Sulphate of lime was composed of sulphuric acid and lime; 46 parts of sulphuric acid were equivalent to 22 of carbonic acid, and these were combined with 28 of lime to form the sulphate of lime. Sulphuric acid is composed of sulphur and oxygen, just as carbonic acid is composed of carbon and oxygen, and sulphuric acid may be made by burning sulphur in oxygen. If we add lime-water to the sulphuric acid now made a sulphate of lime, which is only slightly soluble in water, falls to the bottom of the vessel. Sulphate of lime is found native in the form of gypsum or common sulphate of lime, of anhydrous selenite, &c. It requires about 350 parts of water to dissolve it; but it is very common in the springs and rivers of this country. It is almost always found in blue clay, occurring in the form of crystals. These crystals are composed of 68 parts *dry sulphate of lime, and 18* parts of water. Sulphate of lime has a great affinity for water. When the water is driven off, it forms what is called plaster of Paris. It exists in great quantities in the Paris basin; hence this name. When it is present in water, the lime may be detected by means of the oxalate of ammonia, and the sulphuric acid by means of baryta. Sulphate of lime under certain circumstances is decomposed, and some of the oxygen being abstracted, the sulphur unites with hydrogen, and sulphuretted hydrogen is formed. This is said to be the case with the waters of the ocean off the coast of Africa. Now, it is found that many plants require sulphur; such as Horse-radish, Mustard, &c., and seem to owe their acrid properties to this principle. The sulphur contained in plants, then, is probably owing to the decomposition of the sulphates in the soil. Sulphate of lime is found in the primary, secondary, and tertiary formations, and is very abundant in the neighbourhood of Paris. The use of sulphate of lime in Agriculture is very considerable. In the first place it decomposes organic matter, but whilst it does this it does not attract moisture from the soil. In many plants it is found to exist in very considerable quantities, especially in Clover, but it does not exist in Wheat and Peas. Plants that contain it will not grow well unless it exists in the soil. Some plants require chloride of sodium or common salt; Wheat requires phosphate of lime. Before plants can appropriate sulphate of lime it must be rendered soluble. If it already exist in a soil, no good will arise from adding more of it. The beneficial effect of peat-ashes on a soil depends on their containing a considerable quantity of sulphate of lime. It also exists in the ashes of common coal, and the value of these ashes as a top-dressing for grasses may be thus explained. A great question about gypsum has arisen—does it fix ammonia? Carbonate of ammonia, which is a very volatile salt of ammonia, when it comes in contact with sulphate of lime in solution, will decompose it, and the consequence will be a carbonate of lime and a sulphate of ammonia, by which means the ammonia exists as a less volatile salt; but we must not infer from this that if we sprinkle dunghills or the bottom of stables with sulphate of lime that it will fix the ammonia that is constantly escaping from these places.

The next salt is the phosphate of lime It is obtained chiefly from the bones of animals, but in order for it to exist there it must have come from the Vegetable Kingdom, and vegetables must have it from the soil. The ultimate constituents of this salt are phosphorus, oxygen, and calcium. The phosphorus unites with oxygen just in the same manner as carbon and sulphur to form an acid, and when burned in oxygen exhibits the same phenomenon. (Here phosphoric acid was formed by burning phosphorus in oxygen gas.) 42 parts of lime and 36 of phosphoric acid constitute 78 parts of phosphate of lime. The soil gets its phosphate of lime from artificial manures and from the bones of animals. Bones consist of two parts, an earthly part and an animal part. The earthy part may be dissolved away from the animal by a dilute acid, and the animal part may be driven from the earthly by fire. The earthy part is composed almost entirely of phosphate of lime. Even in fossil bones the animal matter remains, as Dr. Buckland proved by making soap of some Hyena's bones he had found fossilised. When bones are exposed to the air they gradually lose their animal matter. It had been found that the fossilised excrements of animals, which geologists call coprolites, contained phosphate of lime, and these would be probably to a certain extent available for the purposes of Agriculture; but the lecturer could not go the length of Professor Liebig, in thinking that any amount of these fossilised coprolites that might be found in this country would equal in importance our beds of coal. Guano is a substance that contains phosphate of lime, and it is probably that ingredient which renders it so important as a manure. It exists, to a certain extent, in minerals, and is found in Devonshire associated with the tourmaline. It had also been found in Bohemia, and existed in considerable quantities in Estremadura, in Spain. It is perhaps a question as to whether it would not be worth working in Spain. As was stated in the last lecture, it exists in the Brighton chalk. It also exists with phosphate of alumina in clay-slate, and is present in most slates. Liebig states that phosphate of lime is of more importance in Wheat crops than any other. Bone manure is always found beneficial for Wheat. It has been proposed to add sulphuric acid, or, as it is commonly called, oil of vitriol, to bones, before using them as manure. The advantage of this is that the oil of vitriol, not only decomposes the animal matter of the bones, but dissolves the phosphate of lime, and thus enables the plants to take it up more rapidly. There is a considerable quantity of phosphate of lime in hay and Oats, and this will account for its existence in the excrement of horses, which is a valuable manure. The substance called clay is composed of various materials, but all the varieties of this substance contain argil or alumina, as their basis. If potass is added to a solution of common alum, a white precipitate falls down, which is alumina, the basis of clay. It is the alumina which gives to clay its plasticity and those other properties which it possesses. Alumina has an affinity for *water, and also for organic* matter. It *fixes*, as it were, organic matter. If a vegetable infusion or dirty water be passed through clay, the alumina arrests the impurities, and clean water passes through. Alumina is also soluble in acids and alkalies. In addition to alumina, clay contains varying quantities of silica. Silica is seen pure in nature in rock crystal, the amethyst, common flint, the chalcedony, &c. Sand also is composed of silica. It is insoluble in water, and with one exception in acid. When silica and potassa or soda are heated together they form a substance known as *glass*. These glasses may be of varying kinds, and some are of a nature to be soluble in water. It is in this way that the old "liquor of flints" was made. When silica is thus in solution it may be thrown down by the addition of an acid in various forms, sometimes as a jelly, and at others as hard as flint, according to the quantity of alkali in which it is dissolved. It is by means of this soluble power of the alkalies over the silica that plants are enabled to take this substance into their interior, and to appropriate it to the building up of their whole fabric. Besides silica and alumina, clay contains potassa, soda, limestone, and other substances. Silica mostly preponderates in clays; a clay composed of 60 silica and 40 alumina is called a strong clay. All varieties of marl, loam, &c., consist of these ingredients, in varying proportions with other substances. The physical properties of soils are very materially affected by the quantity of clay they contain. Salts of soda and potassa exist in all clays, but are somewhat difficult to detect. A solution of the clay may not produce any effect on test-papers, but if the clay is submitted to the action of galvanic current the alkali is soon developed. (This experiment was performed with the aid of the galvanic battery of the Royal Institution.)* It is often of importance to add lime to clay, as by this means the alkalies of the clay are developed. It is of importance to mix clay and sand together, as the sand furnishes silica, which being dissolved by the alkalies of the clay renders the taking up of that body more easy to the plant. The lecturer apologised at the close of the lecture, on account of its imperfect character. He hoped the time was come when the soil of scientific research, in connexion with Agriculture, which had so long laid fallow, was now about to be cultivated, and would yield an abundant harvest. At the conclusion, P. Pusey, Esq., M.P., proposed a vote of thanks to the lecturer. Every day was demonstrating the importance of Chemistry to Agriculture; at the same time care must be taken that the Farmer was not led away by specious theories, and led to expect much more than could ever be realised. The Duke of Richmond, in seconding the motion, stated that, as one result of a chemical theory applied to the practice of Farming, he had tried on a piece of land of his own the oil of vitriol and bone-dust as recommended by Liebig, and the consequence was, that he had obtained a larger crop of Turnips at a cheaper rate than he had ever done before. He should publish the particulars of this case, and would only state that he had thus spent only 11s. an acre for manure, and had obtained 12 tons of Turnips; whereas in former cases he had spent **£3.** per acre on manures, and had got only 11¼ tons of Turnips per acre.—*Gar. Chro.*

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* With reference to this mode of ascertaining the presence of soda or potassa in clay, Mr. W. H. Potter remarks, in the same paper—"This mode, though singularly elegant, and furnishing to those who possess command of voltaic power a speedy and facile mode of arriving at a result, yet is it not so satisfactory, as regards correctness, as could be desired. We all witnessed the reddening effect of potassa and lime upon yellow turmeric paper; we also saw the same effect produced by subjecting a specimen of clay to the voltaic influence. In the latter case it was ascribed to the presence of soda or potassa in the clay—a sort of *experimentum crucis*. Certain precautions were, indeed, taken to prevent delusive inferences; for instance, the clay was thoroughly exhausted by the action of water, which, by dissolving the soluble saline substances, such as common salt, if any were present, would remove one source of fallacy. But supposing—which is very often the case—that the clay contained traces of lime, as carbonate or silicate, then the water would not remove them; and though the clay under examination might not contain an atom of potassa or soda, yet would the reddening effect upon the test-paper be produced. I do not suppose that the Agriculturist, in experimenting upon his soil, will often employ an extensive galvanic battery as a test for alkali;

Royal Agricultural Society of England.—The members held their Half-yearly General Meeting at the Society's house in Hanover-square on the 9th ult.—the Right Hon. Earl Spencer, President, in the chair. The Duke of Richmond, and a number of other gentlemen were present. "Although," said Lord Spencer, after opening the proceedings with a few general remarks, "we have received during the past year a large accession of members, I am sorry to say that our financial affairs are not in a favourable state. It should be borne in mind that our annual country meetings, though necessary, are very expensive to us. For instance, the Derby Meeting this year, was productive of a loss to the Society, after allowing £1,195. to be distributed as prizes, of between £1,600. and £1,700. This, it will be seen, is one great means of our outlay; yet that outlay is unavoidable. The show-yard and dining-rooms at Derby cost a large sum, but unfortunately they were not filled. At Southampton, next year, I trust we shall not be in such difficulties. The amount of arrears has, I am glad to say, been very much reduced since last year. As a corporate body, we have now a legal right to sue for all these debts; but really it is due to the Council of this Society to say that they have not proceeded to harsh measures in the matter in any one instance. Still, if these arrears be not paid up, we must take means to have them settled. I have no doubt that, in many instances, these debts to our funds have arisen from negligence. However, that may be, I trust to see more attention in future. I shall not detain you longer, but shall call upon the Secretary to read the Society's Report."

The Finance committee laid before the Council the following statement of the arrears of subscription at the present time, in comparison with their amount at the last December meeting:—

Total amount of arrears in Dec. 1842..	£3705
Do. do. do. in Dec. 1843..	1614
Total amount of arrears paid or discharged during the last 12 months ..	£2091

The following were stated to be the exact members of the Society:—108 Life-Governors, 193 Governors, 434 Life-Members, 6115 Members, 13 Hon Members: total, 6863.

Reviews, &c.

The Muck Manual, by F. Falkner, Esq., and the Author of British Husbandry. London: J. Murray.

In the course of last year, Mr. Falkner and the author of "British Husbandry," jointly produced an exceedingly useful little work which Mr. J. Murray has published in a neat and cheap form. It has been so well thought of by our brother-farmers across the Atlantic that an American reprint of it has appeared in New York, under the name of the *Farmers' Manual*, to the manifest injury of the sale of the original edition. Whether this mode of dealing with valuable British books is exactly what it ought to be we leave to others more immediately interested to determine; for ourselves, we suppose it is but a practical

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yet is it desirable that Chemists should be very accurate in their assertions and experimental deductions, for many eyes, intelligent and watchful, are upon their movements; and though they may be forgiven many agricultural mistakes, yet an error committed in their own particular department will not so soon be forgotten. This observation comes with more peculiar force just at the present time, when Agriculturists are beginning to feel some degree of confidence in Chemistry and Chemists.

illustration of those free-trade principles which actuate many at the present day, and which in literature, as in farming, go the extent of robbing a man of that fair and legitimate return for his skill and capital employed in the production, whether of corn or literary composition, which has hitherto been considered his due.

That the work before us is really of a useful and practical kind we shall at once prove by the following quotation on the "*Management of Manure.*" Its theories (for it is theoretical as well as practical) cannot be so well estimated by farmers in general as by those who have dared to look chemistry in the face, and dabble in its formularies. On the "Management of Manure" then, our authors say:—

"In the *management of farm-yard manure* two primary objects present themselves: first, to prevent waste of every kind; and, secondly, to increase the quantity of dung by every means in the farmer's power. The waste is effected by unnecessary and excessive fermentation, by which the organic parts are dissipated in a gaseous form, and by suffering water to run through the dung, by which the inorganic substances, the salts, are carried away in solution. No dung should be allowed to ferment until a few weeks before it is put into the soil, and then only in that slight degree as to render it manageable, and to facilitate its decomposition when in the soil.

"As the farm-yard is the general depôt for dung in the raw state, care should be taken to give it such a form as may best preserve it, as well as bring it to perfection; and on this there is a little difference of opinion: some theorists recommending them to be made so *concave* as almost to amount to a *well* shape, giving as a reason in support of their opinion,—"that the virtues of dung can only be preserved by its being saturated with urine *or some other moisture;*" while others assert that dung-yards should be formed *convex*, and assign as their reason,—"that farm-yard dung *should* be *kept dry.*" "Practical experience, however, points out," as Blaikie says, "that a medium between these two extremes is best." In this we concur; and the form which we recommend is to slope the sides towards the centre: making either at the centre or the lower end, as may be found most convenient, a tank (which may be made at much less expense than farmers generally imagine) to receive the soakings of the dung, towards which the entire surface of the yard should have a gentle inclination for discharge. The bottom should be made of concrete powdered brown lime and gravel, in the proportion of 1 of the former to 6 of the latter, mixed wet, and deposited immediately, or Macadamized stone; or, should the yard be concave, an under-drain should be carried from its centre to communicate with the tank, which should, in that case, be made outside the buildings.

"The water from the surrounding roofs should be conveyed away by shoots, or spouts from under the eaves, and no water from any source should be allowed to pass through the dung, except the rain water which falls directly upon it. Indeed, independently of the injury which the manure will sustain by being saturated with water, there is also the very material consideration of keeping the store-cattle which are kept in the yards as warm and as free from wet as possible. The *dry-litter* from the horse-stables, shaken from the dung, should, therefore, be spread constantly and regularly over it, as it will add much to their comfort. If, however, there be a drain and tank, the yard should not, in our opinion, be bedded with any kind of earth, but should have a foundation for the straw, laid with the trimmings of hedges, quickens, the haulm of potatoes, or of those fibrous substances which are usually burned, as well as rootweeds, which should be collected from the farm, and mixed with a little quick-lime to insure their decomposition. In order to keep the cattle dry and comfortable, the dung from the stall-fed cattle and pig sties, and every kind of rough vegetable stuff or animal refuse, together with all the sweepings, soap-suds, and slops from the house, should be carried from the sheds to a compost formed outside the yard, and added in regular layers to the heap, intermixed with the dung of the horse; for, if this be not done, the manure will be of unequal quality, and the crop, even in the same field, will often display great disparity.

"We are all well aware, that according to the most approved modes of laying out farm-yards, they ought to be surrounded with buildings, which should be raised above the level of the yard, which should also be divided into compartments for cattle of different sorts and age, and every arrangement made in their construction for the saving of labour, and increase of convenience, and if an intelligent farmer had the means of providing his homestead, there can be little doubt that he would be well accommodated; but he must take his land as he finds it, encumbered, as it frequently is, with ill-arranged and ill-assorted tenements which he cannot alter, and respecting which we, therefore, deem it unnecessary to offer any observations.

"It is a common custom to lay a quantity of loose earth of some kind over the yard, as a foundation for the bedding of the cattle when they are taken for the winter, for the purpose of absorbing their urine, and thus creating, or at least retaining, a valuable portion of manure, which might otherwise be lost; and this we admit to be a consideration of material importance, though counteracted in some degree by the cold and damp which it occasions to the stock. If peat can be procured within any reasonable distance during the summer time, it should be carted to the neighbourhood of the yard, and after laying spread to get tolerably dry, should be thrown up into heaps for occasional use during the winter, the yard being first covered with it as soon as the dung of the previous winter has been removed. The peat so laid up should occasionally be spread upon the surface of the dung; but in case it cannot be procured, a few hundred weight of gypsum should always be at hand to scatter over the dung from time to time, and also a small quantity of rough sea salt, or, if that cannot be had, common salt. A little of the gypsum should be also sprinkled every day upon the floors of the stables where the urine runs, which will be swept out and conveyed with the litter to the general depôt in the yard.

"From time to time, as the drainings of the manure accumulate in the tank, they should be pumped or conveyed back over the whole surface of the manure, so as to keep the body of the materials in a constant state of gentle moisture, as nothing is more prejudicial to its quality than allowing it to get alternately wet and dry: but the surface should be occasionally spread with dry litter. The whole should be kept firmly trodden down by cattle; a caution of course not needful where rough stock are kept in the yard, which is often the case. This is exceedingly needful. to prevent the untimely fermentation of the dung The use of the sea salt is obvious from what has been said of its composition, that of the gypsum to prevent the escape of the ammonia when the dung comes to be fermented, while the peat acts as an absorbent, and when fermented becomes a valuable manure. By pumping back the soakings the soluble salts are preserved, and the dung is kept moist.

"Some farmers, of large holdings, improve upon this system, by placing the different species of manure in separate heaps, according to their different qualities and speed of fermentation: thus, for instance, the dung of horse-stables, as being of the richest and hottest nature except that of poultry, that of fatting pigs and stall-fed cattle, as well as that of sheep, when kept in fold-yards, *and lastly, the stores of the straw-yard; and this certainly affords the great* advantage of enabling the husbandman not only to employ those manures at his own discretion, for the use of particular crops at various seasons, but also to either retard or accelerate their fermentation, by an intermixture with each other at the season or purpose for which they are wanted. On small farms, it is, however, inconvenient; but if the plan prescribed above be adopted, the effect of the manure of a farm would be nearly twice as great as when all such means are neglected.

"The dung-yard should be considered as a manufactory of manure, and corresponding skill and attention should be bestowed upon it, if the farmer be desirous of placing his *first of arts* upon an equal footing with others. When it is found necessary to *cart the manure away*, in order to forward the business of the season, previous to the commencement of the work, a quantity of peat, marle, soil, or road earth should be collected on the spot intended to receive the dung. The *foundation of the heap* should be laid with such material about six to nine inches thick, according to the nature of the dung to be laid upon it, and it should be rather inclined to the centre; so as to retain as much as possible of the soakage of the heap; the sides should be kept upright, and the top level. At the conclusion of the carting the two ends should be brought up to the general level of the heap, and the whole surface, including the top, sides, and ends, should be well coated with the mould, or other material provided for the purpose. About three weeks or a month before the manure is required upon the land, the heap should be turned the earth thoroughly mixed with the dung, and another layer or coating of earth placed against the sides and over the top of the heap, by which the whole will be kept moist, and the gases, produced by fermentation, prevented from escaping.

"When the last accumulation of dung is carted out in the spring, for crops which are then in preparation, the cart should not be allowed to pass over the heap, but the dung should be lightly thrown upon a layer of earth, prepared to receive it; and when the heap is finished, it should be encased and covered with the earth, as before directed. It is supposed, in this case, that the dung is carted about a month before it is wanted for the turnip sowing. At the end of that period the dung will be in a high state of fermentation, and when it is carted to the trenches of the field, the splitting plough should follow as fast as the dung is spread in the trenches, and by that means the dung covered while yet reeking, and the seed drill should immediately follow.

"When farm-yard manure is carried out for the formation of dung-heaps which are not intended for immediate use, it is the common practice of most farmers to have the carts drawn over the heap for the purpose of compressing it, so as to delay its fermentation; which, however, not only occasions considerable additional labour to the teams, but also causes the manure to be trodden into lumps by the pressure of the cart-wheels and the hoofs of the horses: thus rendering the decomposition of the heap so irregular as to cause that great disparity which may frequently be seen in the growth of crops which have been equally manured: the cause being attributed to the seed, or the land, or to anything but the real reason. We are quite aware of the expediency in many cases of protracting fermentation, and the consequent necessity of compressing the dung: but this should be done regularly, with equal weight on every layer of the heap; and, if it cannot be effected by the treading of men, it can be still better performed by the roller, in the following manner:—

"Make the heap rather less in breadth than your roller, and to each end of this fix a moveable iron, with hooks for the traces of a horse. Two horses will thus draw the roller, the dung-heap being placed between them, and they may be yoked together by a common whipple-tree and bars. Each layer of the heap will thus be equally rolled, layer after layer, without being trodden upon; and, as the heap gets higher, the labour to the horses will be much lighter than if they had to drag a loaded cart over it: independently of which the advantages of thus equalizing the quality of the manure, and enabling the farmer to spread it without having to break the lumps, and to incorporate regularly with the land, must be apparent to every practical husbandman.

"By such management the great waste which frequently occurs from excessive fermentation or neglect, would be prevented. By the careful mixture in the yard of the several materials the dung would be of uniform quality, and by the subsequent management, neither the ammonia nor the humus or decaying vegetable matter would be materially diminished by such cautious fermentation, nor could the soluble salts be washed away, and thus nearly the whole power of the manure would be given to the crop with such addition as the care and diligence of the farmer provides in the shape of peat, ditch scourings, slops, and refuse of every kind, gypsum and salt. The two latter are most valuable materials when mixed in such proportion as to afford about one hundred weight of each per acre of the land dressed with the manure."

An equal pressure over the surface of a dung-heap, or rather over each layer of the *heap as it* is put together, is, no doubt, im*portant for the reasons given*; but we very much doubt the practical capability of rolling in the mode described, at least, in our opinion, it involves a degree of arrangement which but few farmers will feel inclined to make. The lumps of which our authors speak, and which would naturally result from drawing loaded carts over the heaps, may be and are readily levelled by the men employed at the "mixen," after each load shall have been brought upon it, with their spades and feet, and a sufficient uniformity of pressure obtained to answer every necessary purpose.

As an excellent pendant to the foregoing we need not perhaps apologize to our readers for the introduction of the following on "*Composts*:"—

"Another method of increasing the quantity of effectual manure in a very great degree is that of forming COMPOST; by which the farm-yard dung is preserved, and a most valuable addition made to its fertilizing principle: particularly where peat is easily obtainable.

"The following method of making *peat compost* is given by Mr. Aiton, in his treatise on peat earth, as inserted in Sir John Sinclair's Scotch Husbandry:—

"The peat and dung must be thrown up, in alternate strata, into a heap about four feet and a half high, and in the following proportions: peat, six inches; dung, ten inches—peat, six inches; dung, four inches—peat six inches, and then a thin bed of dung, and cover the whole with peat. The heap should be put loosely together, and then made smooth on the outside. The compost, after it is made up, gets into a general heat, sooner or later, according to the weather and the condition of the dung: in summer, in ten days or sooner; in winter, not perhaps for many weeks if the cold is severe. It always, however, has been found to come on at last; and in summer it sometimes rises so high as to be mischievous, by producing what is called *firefanging*.

"In that season a stick should be kept in it in different parts, to pull out and feel now and then; for if it approaches to blood heat, it should be either watered or turned over; and on such occasion advantage may be taken to mix it with a little fresh peat. The heat subsides after a time, and with great variety, according to the weather, the dung, and the perfection of making up the compost, which then may be allowed to remain untouched till within three weeks of using, when it should be turned over, upside down and inside out, and all the lumps broken;

then it comes into a second heat, but soon cools and is taken out for use. In this state the whole, except bits of decayed wood, appears a black free mass, and spreads like garden mould. Use it weight for weight, like farm-yard dung, and it will be found to stand the comparison.

"Let it be observed, that the object of making up the compost is to form as large a hot-bed as the quantity of dung employed admits of, and then to surround it on all sides, so as to have the whole benefit of the heat and effluvia. Peat, nearly as dry as garden mould, in seed-time, may be mixed with the dung, so as to double the volume and more, and nearly triple the weight, and instead of hurting the heat, prolong it.—A correspondent of Sir John Sinclair's states that he has used this compost for seven years, and considers it to be of immense importance. He would rather bring peat for two or three miles than want it for his compost hills.

"In this process of making compost, a large quantity of almost inert humus is broken down, and rendered fit to yield abundant nourishment to plants, both in the shape of carbonic acid gas and also saline matter; while the ammonia, produced by the fermentation of the dung, is absorbed and retained by the humus.

"In all cases where peat can be had for the purpose of making compost, experience has shown there can be no question about the propriety and advantage of using it for that purpose. The effects of peat-ashes are well known; and in this case the saline and earthy substances, of which they are composed, are made available as well as the humus, which is retained instead of being dissipated, as in the case of burning.

"It often happens that all the dung upon a farm cannot be used at the most fitting season, and must be kept for a future occasion; much care is therefore required to prevent its being wasted, either by fermentation or from the effect of water. The method above noticed of mixing the dung with peat can be practised only in particular situations, but every situation admits of the formation of COMPOST HEAPS by means of mixing earth of some kind or other. It is usual to form compost by mixing the dung with any kind of soil that happens to be most convenient; but it is by no means an unimportant question as to what kind of material is the best for the purpose. The muddy deposit of tideways, the sediment of ponds, and the scouring of ditches, are the first to be recommended; next, calcareous road-scrapings, marl, and clay. In making an earthy compost with dung, there is a threefold object answered: first, to prevent the too rapid decay of the dung; secondly, to present an earthy substance to the slowly decaying matter which is capable of uniting *with it,* and reserving the *ammonia; and thirdly, to* afford some addition of saline matter, which most earths contain. The most finely divided earths are, of course, the best adapted for these purposes, and perhaps a rich marly earth should be preferred to any other, from its known fertilizing qualities, while there is considerable uncertainty in that of the other materials mentioned. It is seldom, however, that much choice can be exercised. In forming a compost heap, a bed of the earth should be first laid down, about six inches deep, and then a layer of dung about a foot deep, lightly and regularly laid upon the earth. Let the alternation be repeated until the heap is about five feet high; a thin covering of the earth, both on the top and sides, completing the whole. In about ten weeks the heap should be turned and well mixed, and again covered with a slight coating of fresh earth.

"Wherever *night-soil* can be obtained in any quantity, the forming it into a *compost,* so as to preserve it from waste and render it fit for the drill, is an object of great importance, as it is much too powerful to be used in the crude state, and indeed cannot be conveniently distributed in that condition. In China, this most valuable material is mixed with fat marl, formed into cakes, and then dried in the sun, and in this state is transported to great distances by means of the numerous rivers and canals which intersect that country. The great diligence with which this manure is collected, and the extraordinary pains bestowed in its preservation by these most skilful cultivators, is of itself the most convincing proof of its great value, and the high opinion they entertain of its extraordinary fertilizing properties. The Chinese adopt the plan of preserving this manure above mentioned chiefly because it presents the most convenient method of transporting it to a distance; but the object of the English farmer is to render it available for his own use, as the best manure that England affords for application by the drill.

"The best mode of treating night-soil for the purpose intended is to mix it with about double its bulk of charred or half-burned peat, which will arrest its decomposition, and by so doing render it inoffensive. *Dried peat,* reduced to powder, or *peat-ashes,* will either of them have nearly a similar effect, though the first is preferable if it can be procured. When peat cannot be obtained, finely sifted coal-ashes is a good substitute; or even the ashes produced by paring and burning the surface of rough clay land.

"In situations where *kelp-ashes* can be procured, it would form an excellent addition to any of these mixtures, as it would supply those salts in which night-soil is rather deficient. Lime should in no case be resorted to, as it very much injures its quality by driving off ammonia. The materials should be well mixed, and spread

> either under a shed, or in the open air, until dry enough to be riddled for the use of the drill. In order to promote the drying, the compost should be frequently turned over. About 20 bushels of such a compost will be a powerful dressing for an acre of land.
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> "Whenever both peat and lime are available, they form a very good compost for manuring pasture land. The mode of preparing this compost may be performed in the usual way of alternate layers, the peat being used in a double or triple proportion to the lime. The heap should be suffered to remain three or four months, during which time it should be turned and well mixed. The lime acts very powerfully upon the inert fibre of the peat, and renders a large portion of it soluble in water, and in a fit state for becoming the food of plants.
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> "Any refuse animal matter can of course be employed in a similar manner. The carcase of a dead horse, which is often suffered to pollute the air with its noxious effluvia, has been happily employed in decomposing 20 tons of peat earth, and transforming it into the most enriching manure. Night-soil may be composted with peat with great advantage. Many volumes have been written on the subject of composts, as substitutes for farm-yard dung, and yet the true principle upon which they should be formed does not appear to have been clearly inculcated and insisted upon. Farm-yard dung is certain in its effect, because it contains all the elements or substances which plants require for their food; and those composite manures which contain the greatest number of the more essential substances are the most likely to act with corresponding uniformity."

We wonder our authors have omitted to specify marl as amongst those ingredients which are most valuable for composts. At page 115 justice is done to marl in this respect, but in so few words as to lead the reader to place less reliance upon it than its real merit warrants. Its entire omission from the chapter whence the foregoing extract is taken is an oversight of which our authors should uot have been guilty.

The Implements of Agriculture. By J. Allen Ransome. London: J. Ridgway.

THIS is an extremely well got up work. It also contains a large amount of very useful information upon a point of *very great importance* to the farmer. That *hemical science will aid* considerably in the cultivation of the soil no sensible man now doubts; but, after a general system of thorough drainage and deepening of the soil, which we deem first in value, the improvement of the implements of agriculture is, in our opinion, the most important of all the steps which mark the advance of agricultural science.

In ploughing, two horses now do the work well which was formerly performed in a slovenly manner by three; and we hope to see the day when three horses abreast, upon light soils, will, with a double furrow plough, do the work of four. The cost of thrashing wheat is reduced by the aid of machinery some 1½d. or 2d. per bushel, an important saving when the whole number of bushels of wheat produced in a given district is taken into account; and light single horse carts are found to answer better upon *any* soils than the heavy monsters slowly dragged along by three or four horses, which are still in use in some counties. Speaking of carts, by the way, our attention is called to the fact that Mr. Ransome has omitted to make any mention whatever of this most ancient and useful implement; in our opinion, a page or two might have been with much propriety devoted to the structure, draught, and comparative utility of the various carts now in use.

There are also several other implements which Mr. R. has omitted to notice; these we shall bring before our readers as we proceed with the examination of the work to which we beg most earnestly to call serious attention. To enable our readers to form an estimate of Mr. R's. style, as a writer, we quote the following from his opening of the subject:—

> "In tracing the gradual progress of farming implements towards their present state of perfection, it will be readily perceived how steadily in all ages and countries, they have improved as agriculture has advanced, and how stationary they have ever remained in those countries where the science of agriculture is neglected. It would even seem that there is an intimate

connection between the establishment of freedom of thought and of action, and the progress of agricultural arts and agricultural life, of all modes the most conducive to health, to virtue, and to enjoyment. The cultivation of the soil necessarily requires the construction of implements for the purpose; and it is gratifying to observe the progress which has been made in them in Holland, in America, and in England, and contrast the beautiful and labour-lessening implements of agriculture which these free countries possess, with those of the cultivators of Spain, of Portugal, and of Russia, or of the more degraded slaves and ryotts of the countries of the East, such as those of Palestine, and of the banks of the Ganges. These, it is more than probable, have remained unaltered, without any successful attempt at improvement, for two thousand years. Thus we find that the Israelites, instead of employing in their warm climate a thrashing machine, or even a flail, to thrash out their corn, were accustomed to turn their oxen on to the barn floor to slowly tread out the seed. And this rude mode is still the custom in Syria, and even in Portugal; and "the Moors and Arabs," says Dr. Shaw, in his Travels in Palestine, "still continue to tread out their corn in this way." "In no parts of Hindostan," observes G. W. Johnson, in his excellent Essay upon the Agriculture of *India*, "is the crop stacked for any time after reaping; barns are unknown; thrashing immediately succeeds the cutting of the crop.—This operation is generally performed by five or six oxen, upon one of which a driver is seated, travelling abreast around a post placed in the centre of the floor. The Hindoo sacred laws expressly forbid the animals being muzzled while thus employed, but in a bad season the ryott is compelled to limit this privilege of his four-footed servant. The thrashing floor is merely a space in the field which has been levelled and beaten hard for the purpose. In Mysore the thrashing floor is made of a compound of clay, cow-dung, and water, spread over the ground, and made smooth. Some of the smaller seeds are beaten out by means of bamboo rods, but anything resembling the British flail is unknown."

And in accordance with this neglect of labour-lessening implements, scarcely any expedients beyond the most primitive appear to have been adopted in the cultivation of the earth.

The English farmer must not expect to find in these ill-farmed and unenlightened countries any instruments even remotely resembling the compact and powerful harrows of this country: instead of these, the branch of a tree, or a few logs of wood fastened coarsely *together*, and dragged slowly over the surface of the very thinly and partially disturbed soil, by oxen, are the only means employed to cover the seed. These instruments are thus described by G. W. Johnson:—"When the plough has done its utmost on the stiff soils of Bengal, they still remain cloddy, and unfit to be seed beds. To remedy this a still more imperfect implement than the Indian plough is employed, which is intended to produce the combined effects of the roller and the harrow. This is nothing more in form than an English ladder made of bamboo, about eighteen feet long, drawn by four bullocks, and guided by two men, who, to increase its power, stand upon it as they direct and urge on the cattle. Again and again has it to pass over the same surface, and then, as in the case of their plough, it causes a great expense of time and labour, without any commensurate effect. The Indian ryotts show their consciousness of the reason that the operation of pulverizing and levelling is beneficial, by calling it *Rasbandham*, that is, *the confining of the moisture.—Asiatic Res.*, vol. x. p. 4.

Following our author through the early history of *the Plough* we come to his notice of the Rotherham plough, patented in 1730. "This Plough," says Mr. R., "was constructed chiefly of wood; the draught irons, share, and coulter, with the additional plating of iron to the mould-board and sole, being the only parts made of iron."

With this improvement in plough-making followed by the *chain plough* of James Small, and a Suffolk plough made of iron by Brand, the reader is introduced to the now so justly celebrated *Scotch swing* plough. Less is said by our author on the subject of this plough than its great merit, in our opinion, deserves. The Scotch swing plough is really elegant in its outline and in its construction, (being of iron,) strong enough for any purpose to which a plough can be applied, whilst the lightness of its draught, when well constructed, and steadiness in the hand of the holder, when at work, render it second to none yet made. Of the Scotch plough there are several very eminent makers in England as well as in Scotland. Wilkie and West, of Lundie, are both eminent in the latter country. West's plough differs from Wilkie's in being a foot shorter in the beam, which is supposed to render the draught lighter; however, this may be, it certainly takes away from the steadiness of the implement, particularly in stony ground. In England and Wales, to our knowledge, very excellent iron ploughs are made upon the Scotch pattern.

The improvements made recently in the casting of iron has introduced the custom of having the plough-frame cast in that metal, the wearing parts, such as the share, coulter, and mould-boards, being taken off and put on at pleasure, by means of screws. Previous to this, however, the late Mr. Ransome patented the casting of shares and the case-hardening of them. These cast-iron and case-hardened shares are now we believe in very general use on most large farms in all parts of the country. The following observations on the mechanical principles on which the swing plough should be constructed accompany a sketch of an English swing plough, with which we will conclude our present notice of the work :—

The Plough Handles.—The handles should be sufficiently wide apart to allow the ploughman to walk in the furrow, and long enough to give him a full command of the plough, so that he may be able with ease to lift or depress it readily in work, bias it to the right or left hand, and swing it round at the land's end from one furrow into another.

The Plough Beam.—This should be of such a length, that its end, commonly called its head, should cut at the point of draught, upon a line drawn from that part of the collar to which the traces are attached, to the share or that part of it where it first raises the soil. On the right arrangement of the point of draught in the structure of the plough depends much of its steady working at its proper depth. It is from the principle of balancing from a point adjusted to the line of draught, that the plough takes its name of *swing* in contra-distinction to the names of *foot* and *wheel* ploughs.

The beam should be curved upwards at the coulter and throat of the plough, to clear itself of rubbish which sometimes accumulates, and should be inclined slightly from the land, or, in other words, towards the furrow, because its tendency is to yield toward the loosened land, *and it therefore requires* this counteraction in the line of draught to keep it in a right direction. This is supposing a pair of horses to b harnessed abreast; if they are harnessed a length, the beam should be still more inclined for, as neither horse then walks on the "land,' the direction of the force towards the land-side is still further decreased.

The Plough Head.—The cross head of the plough, forms a ready means of increasing or decreasing the inclination last spoken of, and the hake, or draught iron, which moves in the arc of a circle along the cross head, has notches by which the depth of the plough can be regulated in unison with the line of draught.—There are various contrivances for these purposes, most of which involve the use of a screw as a means of adjustment; but the plan of pins and notches is sufficiently accurate, and not liable to be out of order.

The Plough-share.—The plough-share is that part which cuts the soil horizontally, and is variously shaped for different purposes. On stony lands it is best with a point; but where the land is free from stones, the wing is best when angular, and the cutting edge in a line, or nearly so.

For hard lands the share requires to have a greater "pitch," or downward inclination towards the point, and it is common for lands in this state to use new shares and to wear them a day or two, and then lay them aside for "summer-lands."

The Mould-board.—The upper part over the box of the share should form the first part of the rise of the mould-board. After the coulte and share have made the vertical and horizontal cuts for the depth and width of the furrow-slice, the mould-board has to complete the work by turning it over and leaving it in its proper position. On the precision with which this part of the plough performs its work, much indeed nearly all, of the beauty of the ploughing depends: hence the importance of discovering its true form for the land on which i has to be used. Desirable, however, as this is there does not as yet appear to be any precis rule for the formation of the mould-board, tha has met with so uniform an approval under th test of practice, as would lead me to speal with entire confidence of it. I have looked a the mechanical principles laid down by Small Bailey, Gray, Amos, Jefferson, Clymer, an others, but am not aware of any plough-maker of the present day who strictly adhere to eithe the one or the other; and so long as the moul board cannot be used on even the same far under circumstances always similar, as i operation will necessarily be affected by th weather, the state of the land, with the varyin depth and width of the plough, it is not an eas matter to determine which form is best for general purposes. It is clear that different soils, as, for instance, light sand, and heavy clay, require mould-boards almost the opposite of each other. The Norfolk mould-board, for instance, is short, with rather a hollow or concave surface, whilst that used in the hundreds of Essex is long and convex.

Lord Western, many years ago, improved upon the form of the heavy-land mould-board in use in that part of the county of Essex where he resides, by cutting away a considerable portion of the lower and hinder part of the figure, and by making it in a straight line lengthwise from the nose to the hind part.

Were the circumstances always the same, there can be no question but that one mathematical form of the mould-board would be preferable to all others; but, under circumstances so various, the plan hitherto adopted has been to prove, by experience, and from practical operation, the forms best suited to different lands under an average depth and width of work, keeping as nearly as possible to the principle of the wedge, as necessary for the proper lifting, turning, and laying over the soil. Provided that the mould-board be made so that the work, while in operation, is properly performed, a good practical criterion as to its figure will be found in the evidence of friction it has undergone, and this, with the fine cast metal now in use, can be determined to a nicety. If on a given soil, the mould-board becomes uniformly brightened—if the mould appears to slip with light friction and with the same pressure from one end of it to the other, it cannot be far, if any thing, out of its proper shape for the purpose intended. And yet, if the same mould-board be used on some other lands, it will immediately show its inapplicability to them by the soil adhering to it in parts, not slipping well through it, and thus evidencing a want of uniformity in its general friction.—Therefore, considering that neither depth nor width of furrow is always the same, and that scarcely one circumstance affecting its use is unvarying, it is difficult to find a rule which shall aptly suit these changes.

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The Veterinarian, for December. London : Longman and Co.

Mr. Field's introductory lecture, as given in this very useful periodical, on the commencement of the Session 1843-4 will find many readers, for it is an interesting exposition of the rights and duties of the practitioner of veterinary art; but we *cannot* altogether agree with him in condemning the authorities at the Veterinary College, or indeed in considering them at all reprehensible in a general admission of pupils who may not be accomplished Latinists, or skilled in the French language;—we think a man does not need all the Greek of a Porson, or all the Classical lore of an Oxford prizeman, to learn the anatomy of a horse or a cow, or to enable him to understand chemical affinities. The French and German languages, we admit, may be useful, as many important treatises are to be found in them, which it is better and more satisfactory to read in the originals than to trust to translations. At the same time let us not be misunderstood; we do not by any means under-rate classical attainments—we should be glad to see the dead languages more familiar even to the mass of the people, than they now are, and particularly to the professors of a science so important as veterine surgery; but we would rather the College itself was less classical, than that one zealous and observant youth should be denied admission to it, for want of those proficiencies which, however desirable, are not, in our opinion, essential.

Mr. Hutchinson, of East Retford, has a collection of cases on the present epizootic disease amongst cattle, which he prefaces by the following diagnosis of the complaint as he has found it:—

> "Constant hoozing—great irritability of the trachea, and pain upon pressure from the larynx to the sternum. The eyes appear dull and sunken—the muzzle is protruded, yet lower than usual—they separate themselves from their companions—continue to graze, but in an indolent manner—the secretion of milk is diminished and sometimes totally stopped—the coat looks unhealthy. The respiration is increased—the heaving at the flank is very considerable—after coughing the patient appears to suffer considerable pain. The pulse is from 60 to 70 per minute, but small and feeble—the ears and extremities are cold—the bowels in their usual state.
>
> "From the third to the eighth day the animal generally becomes worse—the breathing is more

difficult—the respiration increased—the flanks beat like those of a broken-winded horse—the hoozing becomes more frequent, yet weaker—they begin to moan—there is disinclination to move—the bowels become daily more and more relaxed, and end in violent purging—there is rapid absorption of the muscles, with great prostration of strength. Should the animal, after the third day, appear to rally, it is marked by the cough becoming stronger—his lying down more frequent—his head becoming more elevated—his looking somewhat anxiously round when visited, and gradually seeming inclined to feed, although a very little satisfies him. He also frequently urines."

The following is his mode of treatment:—

"In the first stages I have found bleeding give great relief, from six to twelve pounds of blood being abstracted. In some cases I repeat the bleeding on the following morning, but in no case have I found them to require or able to bear a third bleeding, debility being a strong characteristic throughout the whole of this disease, and so much so, that I have generally found all my patients to require a slight stimulant, although at the same time I may be using depletive measures.

"I generally clip the hair close off the sides of the chest, and from the spine to the sternum, extending well back and down the whole course of the trachea; I then rub in a strong blister composed of pulv. lyttæ, bichlor. hydr., spt. terebinth. et ol. lini, and repeat it in twelve, or from that to twenty-four hours, as the case may require; but before the blister is repeated the parts are ordered to be well fomented with hot water. Setons are inserted in the dewlap. I give submuriate of mercury, hydriodate of potass, nitre, powdered opium, and ginger, mixed with thick linseed cake gruel. If they will eat, I allow them scalded bran and oats, or linseed cake; but if they refuse all food I drench them repeatedly with thin gruel. This treatment I continue until the inflammatory symptoms have subsided, which generally takes place from the second to the fourth day, I then give tonics, as cupri sulph., ferri sulph., p. gentian, p. zingib., and small doses of p. lyttæ, twice a-day, repeating the saline medicine at noon, so long as the animal's respiration continues hurried. As they continue to progress towards convalescence they may be allowed a little green food, as potatoes, turnips, carrots, cabbage, or a small quantity of old hay soaked in warm water, or a few mashes. Continue the thin gruel for drink, or occasionally hay-tea. Great care is now required in feeding, as the least over-allowance of food will produce indigestion, which at all times, after illness, is attended with danger."

We have before noticed the post mortem appearance by different writers, and we do not find that Mr. H. differs from them materially. The following is the result of his examinations after death:—

"The post-mortem appearances discover extensive disease in the cavity of the chest. The bronchial tubes suffer in proportion to the duration of the disease in their being filled with frothy mucus. There is slight effusion of serum, with extensive adhesion between the plura-pulmonalis and the pleura-costalis, particularly in the right cavity of the chest. The substance of the lungs is hepatized, and appears almost impervious to the air. The heart also is larger than usual, and of a darker colour; it has become flabby and has lost its usual dense muscular feeling."

We would willingly transfer MR. PERCIVALL's case of "Constipation" had we room for it; it is in the treatment of diseases which have no specific character, or those, the characteristics of which are not distinctly defined that the skill of the medical practitioner, particularly in the case of the domestic animals, is tested. Mr. P. in the case reported came out of the treatment of a horse of great value with much credit.

There is an interesting account of the extraction of a bone from a dog by cutting upon it directly into the *œsophagus* (gullett) by Mr. W. Barker, of Stokesley.

Professor Dick, of Edinburgh, mentions a case of poisoning with sheep salve, which by an analysis of Dr. Fyfe, was found to contain a very large portion of white arsenic. The Professor seems to think the owner of the cattle which were destroyed by it has a remedy at law against the vender of the salve, inasmuch as he, who alone knows exactly its contents, chose to advertize it as "free from those corrosive poisons and sulphureous preparations so frequently used in other dipping stuffs:" we sincerely hope he has, and that he will avail himself of it; the puffers of medicines, as well as of many other things, richly deserve what they do not often get.

The following is the Professor's account of the calamity:—

"About a month ago, I was called to attend a stock of thirty-two cattle that had been poisoned (I should rather say destroyed) from having been washed with a sheep bath, for the destruction of a few vermin that had appeared upon them. They were washed on the neck, back, tailroot, and some of them between the hind legs.

"One of them licked himself, and died in six or eight hours. The others were observed to lick themselves, and seven more of them died from the absorption of the bath through the medium of the skin, some of them even more than a week after the application.

"The post-mortem examination exhibited the most violent inflammation and destruction of every organ and membrane that secretes. The brain did not escape, and the stomach was much corroded, even in those who died from absorption of the poison."

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Some Remarks on Lancashire Farming, and on various subjects connected with the Agriculture of the Country, with a few suggestions for remedying some of its defects. By Lawrence Rawstorne, Esq. London: Longman and Co.

Mr. Rawstorne, the author, is a gentleman of large property in the neighbourhood of Preston, and being desirous of improving the condition of his tenants, and his estates at the same time, was anxious to form an agricultural library, for the use of such of the occupiers of his farms, as were able and willing to take advantage of his liberality. He proceeded therefore to throw together some desultory ideas, which, increasing in interest as he advanced, he was led into the perpetration of the unpretending little volume before us. The book itself is cheaply got up, with a view, no doubt, to its circulation amongst the farmers of the county, to the agricultural errors of which it is supposed to relate—we say supposed to relate, because we know for a certainty that most of the bad practices which prevail in Lancashire are equally common to many other counties of England and Scotland; and the warnings given by Mr. Rawstorne to the Lancashire farmers may with great propriety be received by those of counties hitherto accounted well cultivated, *to their* manifest advantage: to them—to all, therefore, we would recommend the outlay of the few shillings which are the cost of these remarks, satisfied, as we do so, that we are "rendering the state some service."

Our author lays down the three following simple rules to bring soil into a state of high cultivation; or if it is already in that state, to keep it so, viz.:—

1. To carry off all stagnant and superfluous water by means of judicious draining.—
2. To return through the medium of manure the strength and fertility which has been extracted from the land by cropping.—
3. To eradicate all noxious weeds, that the strength of the manure may be thrown into the crops and not into the weed.

Of the first of these he observes:—

"Draining is the basis and groundwork of every agricultural improvement. Of this there are two kinds; the one for carrying off spring water from the land; the other surface water. Each of them is distinct in its nature and effects: the first of the two being partial, the other universal. The former is chiefly confined to hilly countries, or at all events to those where there is a considerable variation in the rise and fall of the land; for though water will, under certain circumstances find its own level, yet springs are rarely to be met with, unless there is more elevated ground above them. The principle on which they act is clear. The wet penetrating through the upper lighter soil, and being caught by a more retentive one beneath, will be conveyed along that until it finds an outlet on the side of a declivity. Lodging there it forms a swamp. The only way of removing this is to cut a trench through the higher part of the swampy place, and thus, the source of the spring being reached, its contents are discharged in a new direction. As deep cutting is generally required, and this through a soft spungy stratum, nothing can serve so effectually the uses of a conduit, as a hollow drain of stones, which on the top should be filled up with pebbles, gravel, brushwood, turf, or some light material. This will keep the drain open for any number of years, and will give a perfect firmness and solidity to the ground below. The other kind of draining is of a more general character, and it is from the want of it, that so large a part of this kingdom has so long lain in a barren and unprofitable condition. All land, with the exception perhaps of the blowing sands of Norfolk, and some other peculiar soils, such as chalky ones, will be improved by draining, and without it, the common operations of husbandry cannot be carried on with any certainty of success. Crops of corn or grass may, doubtless, be raised by the plentiful application of manure alone, but it is also certain, that an increase of produce by equal means, or the same produce with inferior means, namely, with less manure, may be effected, if the land be laid first thoroughly dry, rather than being drenched with stagnant water."

Of the second :—

"But however well the land may be drained, all this will be of little avail unless attention be paid afterwards for renewing it with such manures as are within reach of the occupier. The first rule in making a good dung heap is to let nothing be wasted. Let all such materials be collected as may serve to increase the quantity, to cause it to ferment, and to enrich it in such a manner, as, when used, may contribute to restore the soil to the fertility it possessed before it was cropped. With this view if bog soil or sea slutch be within reasonable distance, these should be carted up in the summer time, when the teams might else be lying idle. These should be placed at the bottom of the farm-yard for the dung to lie upon in winter; or they should be formed into a large heap ready to be mixed with lime, or with stable manure, when this has been sufficiently heated and decomposed from its original dry state. Thus the real quantity of this restorative compound will be much augmented, and a valuable compost be obtained, which will go much further towards keeping the whole farm both grass and ploughed land in good heart."

And of the third :—

"As to the eradication of weeds common sense points out the advantage and even necessity of removing or destroying these noxious intruders, which often cause more exhaustion of the land than the best crops, and which if allowed to remain and run wild, will much prevent any crop arriving at its proper maturity. One years' seed is said to be six years' weed.—If the weeds are well rooted up and turned over with the harrow, as soon as they appear, they are easily eradicated, but if allowed to get ahead, and particularly to seed, the labour required to get rid of them again is immense, double or treble, what it would otherwise have been."

We were glad to see the following argument in favour of leases :—

"Farmers, who have no lengthened or certain interest in their possessions, want forethought: they only look to present advantage, and therefore will not give themselves the trouble or expense to do what is only to bring in a return at a more distant period. But if a tenant has a sufficiently long term in his farm, he should lay out his money in good time, so that in the end he may reap the fruits of his labours."

Although at page 69 he seems to consider long leases, in Lancashire at least, as but dangerous documents in the hands of a bad tenant; for he observes :—

"As to the farming in this county, when we see the class of people engaged in it, their utter inefficiency in all those qualifications, which constitute superior excellence whether in capital, skill or enterprise; and when we view the general low state of agricultural knowledge amongst us, it may be doubted whether long leases would not be rather injurious than otherwise.—They would certainly be all in favour of a bad tenant and against the landlord; as in this case an opportunity would be afforded for the whole farm to be run through, and ruined, and then abandoned; which indeed is not an uncommon occurrence even as things are constituted at present."

Bad leasehold tenants, like dishonest contractors, upon any subject are troublesome and dangerous customers; but with a lease carefully prepared no opportunity would be afforded to such an one to "run through" a farm "and ruin it:" he might certainly make the attempt but the forfeiture clauses would bring him up, as the sailors say, "all standing," and deprive him of the power of completing the mischief he might contemplate.

Were leases more common, and were their clauses more simple, courts would be better inclined than they are to listen to the grievances of which landlords it is true have but too often to complain; but whilst the present absurd system of cramming into a lease all that legal ingenuity can devise to fetter a tenant in the management of his land, and to run the document to an extravagant length, prevails, no wonder a judge tries by every means in his power to stifle, by technicality, the action at the outset. We remember a case brought before the late Baron Vaughan, in which a landlord sought to recover from a tenant compensation for the positive injury he had sustained by the mismanagement of a large farm during a fourteen-year's lease. The lawyers had set out in the pleadings the whole of a very long lease which made the cause look so terrible that the learned judge declared it would take till Christmas to try it, (it being then September;) and he literally drove the parties to a reference. Were leases, as we before observed, more simple in form, and were the few clauses they contain to the point—working a forfeiture of the tenant right in cases of proved mismanagement, leases would be as safe in Lancashire as in the Lothians; and bad tenants would be readily restrained anywhere.

To show the nature of the speculative part of our author's labours we shall quote his conclusions as to the value of spade husbandry, after setting out pretty much at length Mr. Mitchell's account of his cultivation of a farm of 207 arable acres, in Norfolk:—

"Spade husbandry is of use in laying down land to grass, and in preparing it for a plantation. Where a field has been thoroughly impoverished by over cropping and filled with weeds, there is no mode of laying it down to grass so good as trenching with the spade. The old system is now happily exploded, that of letting land lie, because it is so worn out, that it will not produce a corn crop. No land should be laid down, unless it first be brought into good heart, and the particles of soil be well broken and pulverized. If the land be by nature of a stiff retentive kind, and by mismanagement be rendered still more so, it is very doubtful whether it would ever repay the expense of a green crop. A naked fallow might be the means of cleaning it, and, so far as that went, it would be doing a great deal of good; but this would not of itself enrich it. Trenching with the spade would be the cheapest and most effectual mode, by which the desired end could be attained. For this operation the whole field should be first drawn out into breadths of eight yards for the butts, which may be done either by the plough, or with the spade, by the overlooker who will be required to work along with the men employed, or within reach of frequently inspecting their work. The butts are to be trenched sixteen inches deep at their top, curving regularly down to the furrow, in which a hollow should be left for facilitating the draining on the following year. Each *man should* have a stick of the exact length of the depth he is to go, which should be tried frequently by the inspector with the ground already dug. The first spit of the spade will throw all the old sterile soil with the weeds in it to the very bottom of the trench, the loose pieces of earth lying there having been first well shovelled up, and spread upon the upper part. These weeds, if buried to the depth named, will not spring again. The second layer of earth will consist of the unstirred soil, the value of which will of course vary in different situations, and perhaps in some it may not be worth bringing to the top. In that case it may be better to lessen the depth, or, if the merits of the subsoiling system be clearly established to go the sixteen inches deep, keeping the upper soil where it is. If the work be done before Christmas, and the clods are laid up large and rough, they will fall from the action of the winter frosts; and it is quite extraordinary how fine the whole will become. It will then constitute an admirable seed-bed for oats or barley. If, however, any quantity of rain has fallen, the outer part is apt to become so sad and encrusted, that it is desirable a light skimming of the plough should be given it; and if a good compost with lime or dung in it be put on at the same time, the succeeding crop will be much benefited, as well as the grass seeds that are to be sown upon it. By the plan here suggested, the following advantages will ensue; the butts will have been formed with greater regularity than they could have been by the common operation of the plough; the soil has been opened and comminuted according to the subsoiling plan, and the drainage will be made to answer either principle; the one, supposing water to run underneath the soil; the other, on the surface of it; a new soil has also been brought into play, which, in some cases, where the land has been quite worn out, may be of consequence. But one of the most important advantages attending it is, that unless this were done, a fallow would be required, and the land would have to lie for a year without being cropped, which of itself would be a great loss."

But of the cost of these operations as compared with the profit our author says nothing conclusive. That heavier crops may be grown upon a deep soil than upon a thin one no man doubts; the only question is how to obtain that deep soil, into which the tender fibrous roots of plants may penetrate without receiving injury from stagnant water, at the cheapest rate. We know what subsoil ploughing will do for us, and what its cost; but of spade husbandry the examples are so few and the accounts so contradictory that none can wonder at the hesitation with which farmers meet the recommendation, or that we should pronounce it speculative.

If other gentlemen, of landed property, in *other* counties, would follow the example thus worthily set them by Mr. Rawstorne, of examining for themselves the practical details of agriculture, and committing to paper their "desultory ideas" upon the subject, a mass of information for the statician or the statesman would result, which would go far to remove the ignorant prejudices which too much prevail upon points declared by every philosopher of every age and nation of the last importance to the people.

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An Agricultural, Geological, and Antiquarian Journey. By an Amateur Farmer.

We have glanced through the pages of this little volume, and the only remark we can make on it is, that the writer is a free-trader, as we gather from the following, written amongst the iron mines of Merthyr Tydvil—no wonder he should write thus amidst the smoke of the furnaces:

> "Some remarks may now be indulged in, relative to the share which these iron and coal workings have on the commerce of the country; and from these the importance of England in all parts of the world. Hence mines are of the first consequence. They enable the cotton-spinner to go to work—the silk and the woollen manufacturers to offer their fabrics in competition with any nation of producers or makers in any quarter of the globe. It is the coal and iron which may be considered as the great fly-wheel, or propelling power of England's machinery; the shipping interest, as well as the manufacturing, are but smaller wheels of the machine; the agricultural interest or the produce from the surface soil, is but as oil to the wheels; the increasing population of this country could not have been employed had it not have been for the facilities of getting at these minerals, (for the increased labourers have been found by the late census in a very trifling degree employed on the land, although the waste lands and improved culture by the spade offer the *means;) therefore, but for these* mines and manufactures England would have been as Ireland now is, a poor and miserable heap of human beings. To the iron and coal, the copper and tin, we may attribute the plenty of gold and silver in this country; to the want of enterprise in Ireland we may attribute their 20s. and 30s. pieces of paper, representatives of money. Some people will say, "Do not let your gold go out of the country for the purchase of corn;" as if forsooth, the merchant did not bring it into the country, and had not as good a right to take it out again, if the state of exchanges answer his purpose so to do:—the gold belongs to Mexico and Peru and not to England; it is the iron, coal, copper, tin, lead, &c., which are the mineral riches of this island; they it is which have brought the gold and silver, the produce of other countries. Would it not be foolish to say, "Do not let the iron and coal go away for corn, for they belong to our land?" it is equally ridiculous to say, "Do not let the gold go away, it is ours; let only goods go for corn." It is only by commercial intercourse we can hope to have more gold; let then the thousands of human beings at Merthyr and other mining districts have bread in plenty, and they will raise from the bowels of the earth more of gold's worth for exchange with Mexico and Peru."

After this paragraph he quotes Sir Robt. Peel in the following words:—

> "As to the lowness of price consequent on the corn laws, he must say that it was not owing either to the corn bill or the tariff, but that it arose in a considerable degree 'from the depression of trade, and the diminished power of consumption;' his firm conviction being that the price of corn depended more on prosperity of commerce and manufactures, than on any corn-bill whatever"—Sir R. Peel on Mr. Villiers' motion, May 9th, 1843.

We know it is the generally received opinion of political economists, that as the manufacturers flourish so will the farmers; but how was it in 1835, when the manufacturing prosperity of the country was greater than it had ever been before? or how is it now, when manufacturers are doing more than they did even then? We all know what prices were in 1835-6, and we know that the present value of wheat is owing entirely to the absence of any extensive importation, and to that cause alone;—were the quantity of foreign corn in England any thing like what it was 12 or 14 months ago, the price of it would be as low or lower perhaps than it was then, notwithstanding the present manufacturing prosperity. A supply suited to the demand is what we want, and not more.

Report of the Proceedings of the North Walsham Farmers' Club, from its commencement to the present time. Norwich, Bacon and Co.

The Fourth Annual Report of the Beccles Farmers' Club, 1843.

No wonder that in the report of the North Walsham Club, the growth of Flax and the employment of linseed meal and other ingredients of British growth, for fattening purposes, should hold a conspicuous place, seeing that "*The Norfolk Flax Society,*" the first society established in England for improving the culture of flax, originated with the club, and that Mr. Warnes, the inventor, if we may so say, of the "compound cakes," which are likely to supersede the use of foreign oil cake, in the fattening of cattle, is a member of it. Of these cakes the report gives the following "process" in the manufacture:—

"To fifteen gallons of water put one stone of linseed meal, and after this is boiled to a pulp of a jelly-like substance, add by little and little, four stones weight of pea or bean meal, or a mixture of both, together with inferior wheat, or any other grain at the option of the parties; this is to be well stired in and incorporated by means of an iron grubber, constructed somewhat like a spade with open ribs. The process of incorporating the mass occupies about twenty minutes, when it is ready to transfer to the moulds. The fire being damped or wholly removed in order to prevent the mass from adhering to the bottom of the vessel, it is taken out with a large spatula, somewhat similar to a bricklayer's trowel, and transferred to the moulds prepared for the purpose; in doing which care must be taken to remove it from the sides of the cauldron first, rather than from the middle, otherwise as it cools it adheres like glue to the iron vessel. The moulds are constructed in sets of seven each, comprised in a frame about three feet six inches long, nine inches wide, and two inches and a half deep, the divisions of which are four inches and a half apart, consequently each cake is about the size of a brick

"This frame is *open at the top and bottom,* and *is placed on a flat board (for the purpose of* being filled) in all respects similar to a brickmaker's table and mould, except that seven cakes are made at the same instant instead of one brick.

"The dough (if we may so call it) is suffered to remain in the moulds a short time to cool and shrink, which it does sufficiently to admit of the frame being removed, thus leaving the cakes perfectly compact in the form of a well-made brick. They are then placed upon a splined rack, in a building through which there is a current of air from two latticed windows.

"In three days it is sufficiently firm to admit of its being removed to any distance for use, and with a moderate degree of care it may be handled or packed together in a cart without injury even to its appearance.

"The quantity of compound contained in one cauldron, as before described, is sufficient to fill eight moulds, and consequently makes about 54 or 56 cakes. These, when three days old, weigh about three pounds three or four ounces each."

The report also contains the substance of a lecture delivered by Mr. John Coleby, surgeon, before the members of the club, in reference to these "cakes," and to the superiority of cooked over raw food for animals, which he concluded in the following words:—

"We have been engaged in the consideration of the relative value of cooked and crude food in the nourishment of animals; we have seen in the course of our enquiry some striking and beautiful instances of the adaption of the different organization of the animals to the circumstances under which they were designed to pass their lives, and we cannot but be attracted by the wise aud beneficent provisions made by the hand of the great Creator to meet the every want of his creatures; the farther we enquire the more will instances multiply, illustrating the same delightful fact; but perfect as are all the arrangements of the universal economy, it does not follow that the use of artificial means may not facilitate certain processes upon which the nourishment of animals depend, and under certain circumstances the use of such means may be most important and valuable. The enquiring mind of man may be permitted to pursue its investigations in this field of research, without for an instant in the smallest degree appearing to indicate doubt of the wisdom and the beauty of the provisions which the great God of Nature has furnished to his every creature."

There is an account of some experiments on the growth of turnips, with a view to determine the proper distance between the drills, and the sort of manure to be used, but nothing new seems to have been elicited.

A paper *On the nature and properties of artificial grasses*, was read at the club, in which, after speaking of lucerne and sainfoin, cow-grass, a deep rooted plant, and therefore well suited for their soils, which may have been subsoil ploughed, is noticed in the following terms:—

"Cow grass, which is a species of red clover, is also a deep rooted plant, and one which I can fully recommend to every farmer, but especially to those who farm on the six years' course of husbandry.

"In the second year it frequently happens that the common broad-leaved red clover dies off, and sometimes the common rye-grass, which very seldom happens to cow grass—this will stand the second year, and be nearly as prolific as it was the first. It is a perennial grass, and will sometimes remain in the land for a very great length of time."

The utility of the subsoil plough was considered, and the following resolutions agreed to:—

1st. That the subsoil plough may be applied with advantage to all such land as requires to be under-drained.

2nd. That it is highly beneficial for breaking up tenacious and adhesive soils, hard pans, or beds of gravel lying near the surface; and

3dly. That it renders those fields, or portions of fields, more fertile which are subject to *scald* from any cause whatever.

We wish all other farmer's clubs would take the pains to record their proceedings the North Walsham club has done, as much useful information of a practical kind would be afforded calculated to benefit the farmer in an eminent degree.

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The report of the Beccles Club contains an epitome of the proceedings of the club during the year, and its resolutions upon several practical subjects which had given rise to discussion.

On the question of "*The best breed of sheep, adapted for the neighbourhood*," it was resolved—

"That the best breed of sheep, for this neighbourhood, is the cross from a Down ewe and Leicester tup, from its early aptitude for fattening, and its being the most saleable in our markets; but where more time is given the pure Downs, or those reared from a half-bred Down and Norfolk ewe and Leicester tup, were the most desirable."

On the question of the best method of *keeping cows for produce and profit* it seems *to have been agreed—hear this ye breeders* and boasters of short horns—"that no cows were equal to the Suffolk breed for dairy purposes."

Shed-feeding them in summer seems to have been agreed to on all hands.

On "The best manner of laying down land for permanent pasture" the club came to the following resolution:—

"That in laying down lands for permanent pasture upon wet soils, the first requisite is, that the land be thoroughly drained, and cleaned from all perennial or root weeds, and reduced by ploughing and harrowing to an even surface and as fine a tilth as possible, and that the same should also be in good heart. That the best time for sowing the seeds is the month of July, and that no stock should be allowed to feed upon them till the next spring, when neat cattle might be depastured upon it, (if the weather is dry,) the latter part of April, for a few days, and then to be spared up for mowing; which operation should not be performed till comparatively late, in order that those grasses which arrive at maturity the first season might shed their seeds, and thereby thicken the bottom. That cow-grass, white clover and red suckling, the Italian and Stickney rye grasses should form part of the seeds in laying down any pasture, with such selected grasses as are found to be indigenous to the soil, climate, and situation, and are found a part of the pastures of the immediate neighbourhood; that cocks-foot should be added to the above seeds for light lands; and that such soils may be laid down with a small seed of barley or brank."

"The best varieties of root for cultivation" afforded a discussion, and in the course of it, an objection to Skirving's swedes was raised, which has not a little surprised us. In all turnip countries the higher you can get your bulb raised above the surface of the soil, the better; but a gentleman of the Beccles club seems to have an idea that, being above the soil, the root is exposed to the frost, and to the attacks of game, and consequently he would have them pretty much in the ground. There is no greater fallacy, as it appears to us, than this. A turnip does not root so well, nor does it keep so well, in average seasons, when covered with soil than when it has been exposed to the atmosphere. Critical judges of Swedish turnips are particular about the shape of the root, and the size of the top.

A year ago we had the pleasure to visit a field of swedes, estimated by competent judges to weigh 32 tons per acre, almost every one of which stood at least 10 inches out of the ground; their tops small without stalk, of a russet brown colour, and likely enough, as it appeared to us, to keep for a twelve month.

The club discussed "The advantages of corn rents over a fixed money payment." This is a subject but little understood amongst English farmers; however, the club came to the resolution, "That corn rents are to be preferred to fixed money payments."

New Implements.

We take the following account of a draining plough from Mr. Alexander's description of it in the last No. of the *Transactions of the Highland and Agricultural Society of Scotland*:—

"The high importance of thorough draining, and the great extent to which it is now being carried, together with the heavy expense attending the operation, are producing constant calls for amelioration in the latter point. The casting or opening of the ground for the formation of the drain, though not the heaviest item in the list of expenses, forms yet a sufficiently formidable item to call for reduction. This operation has, for the most part, been, and in numerous localities must continue to be, an operation with the spade, but numerous attempts have, from time to time, been made to bring it more under mechanical influence; and for this purpose the plough, under a variety of shapes, has been tried with more or less of success. Seeing that no implement hitherto brought out for this purpose had possessed all the requisite advantages that were desired, and that a general desire still prevailed for an instrument of the kind, the Society offered a premium which appeared adequate to bring out the energies of practical men towards the attainment of this object, the result of which has been the production of the plough now to be described, and which seems to possess, in the opinion of practical farmers, a greater amount of capability for performing the operation required, than any implement hitherto adopted.

"This plough, or rather ploughs, are described in general terms by Mr. Alexander himself in the following words:—"This plough was first brought into operation in December, 1840; since then I have drained upon my own farm about seventy Scotch acres, and likewise above 200 acres to neighbours and others, performing, in general, the opening or casting out the drains, thirty feet apart, over one Scotch acre per hour; the depth varying according to the nature of the ground, but averaging about two feet two inches. *The operation is most advantageously effected by using two such ploughs*—a leader and follower—the first taking out a depth of sixteen to eighteen inches, with a width of seventeen inches at top and seven inches at bottom. The second, or finishing plough, takes out the remaining depth of eight to ten inches, giving to the cut a width of five inches only at bottom, and without producing any change in the surface width. The earthy matters lifted in this second operation are laid on the surface, on that side of the cut opposite to where the products of the first furrow had been laid; and the cut is thus finished, with the exception of the cleaner or scoop being passed along the bottom before the tiles or drain stones are laid on. Though I have here described two ploughs as being required to complete the cut for a drain, either of those described may be used alone to finish a cut, by changing the sock and mould-board; and in using the plough in this way, it is proper to go over a-half or a day's work with the plough under the *first* form, and then to change the irons to the *second* or finishing form, completing those cuts that have already got the first turn, before the plough is again altered to the *first* state. In practice, however, I prefer a plough of each kind complete, which allows the work to proceed more uniformly, and without the loss of time to man and horses.

"By removing the mould-boards and other outstanding attachments, these implements can be employed as subsoil ploughs; and though they have hitherto been principally used for cutting drains in strong and deep clay lands, they have also been successfully employed in *dry field* land, where the soil was free of large stones. The weight of each plough is about five hundred weight, and the price £9; but, with the additional mould-board and mounting for making the second cut, a single plough amounts to about £11.

"In comparing the expense of cutting drains by this implement and by the spade, if we take land that has had the drains laid in at fifteen feet separate, which gives forty-four chains of drain to the imperial acre, the price for cutting drains, of twenty-six inches average depth, with the spade, may be stated at 6½d. per imperial chain, or 23s. per acre nearly. The expense of cutting out drains with my ploughs, which, with ten horses, are capable of finishing the drain-cuts of half a Scotch acre per hour, or of half an imperial acre in forty-eight minutes nearly, and equal to six and a-quarter acres per day of ten hours. Taking the expense of ten hours, together with men, at £3 : 15s. per day, gives the expense per acre 12s., shewing a difference in favour of the plough of 11s., being a saving of nearly one-half the expense of cutting the drains.

"The principle of these implements lies in their cutting the furrow or daain on both sides with coulters, and gradually elevating the earth so cut and loosened upon the inclined plain of the mould-board, until it is thrown off by the latter, and deposited on the surface by the side of the drain.

NEW THRASHING MACHINE.

A NEW steam-power thrashing machine is in course of erection by Messrs. Parry, at their foundry in Chester. It is of the locomotive kind, and is to weigh, when on the road, but 32 cwt. The two wheels on which it travels will serve as fly wheels when it is at work, the speed being given by a strap over one of them, connecting with a fixed pulley on the shaft or rod, by which the beaters are set in motion. The power is calculated at five horses; every part of the thrashing machine is of iron, the bed being furnished with 14 ribs, against which the beaters on the drum (five in number) drive the straw as it passes through the machine.

We expect much from the performance of this little implement—its size may be estimated by its weight; one horse will readily move it from place to place, and about 3 cwt of coal is calculated to supply it for eight hours. We hope to be able in our next publication to give a more detailed and correct account of its capabilities.

AGRICULTURAL REVIEW.

BEFORE noticing the present position of the British farmer, we must upon this, the first occasion of addressing our readers, be permitted to carry them with us as far back, in point of time, as our space will permit, rendering our review as retrospective as possible, in order the more clearly and correctly to define the place the farmer now holds in our social scale, and to point out to the agricultural public what it appears to us are its future prospects.

During the last 50 years the British Isles may be said to have taken their first step in the grand march of agricultural improvement. Practical experience made farmers wise in their generation, and the antiquated prejudices of by-gone ages were for the first time expelled from certain districts.

The custom of making known through the press the results of experiments, and the value of certain rotations of crops upon particular soils, which began to prevail within the period before mentioned, transferred from one part of the kingdom to another every practice which proved to be of value, and men became acquainted with these beneficial operations, sooner or later, as they happened to be more or less able or inclined to take advantage of the information thus diffused—some could not read; others would not; and, "a book farmer" too often became amongst these latter a term of reproach. However, much good was really effected: the old *Farmers' Journal* contributed largely to the dissemination of the most useful information; and though the price of it was too high for the great body of farmers, had they been able to appreciate it, yet men of education and high scientific attainments having begun to turn their attention to agriculture, the columns of that journal became the medium of general communication.

The drill system and the introduction of green crops were the first fruits of this improved state of things. The high prices of human food during the war led to the very natural conclusion that he was the best patriot who most contributed to the advancement of agriculture, and by consequence, to the means of human subsistence. Hence the most exalted individuals in the country applied themselves zealously to the task of improvement: bogs were drained; commons and heaths, heretofore considered barren and worthless, were enclosed, and made "smiling lands;" premiums were offered for successful cultivation, or improvements in the various breeds of stock; and those associations were first established for the encouragement of agriculture which are now so prevalent, and which have proved so useful. The venerable Earl of Leicester shewed what could be done by judicious outlay of capital upon a soil so poor as almost to amount to utter barrenness—so *hungry* that no conceivable quantity of manure was said to be sufficient for it; yet now, every farmer in the most remote and inaccessible places knows, if he knows anything, that the county of Norfolk, which formerly did not grow wheat enough for its own consumption, at the present day exports largely to the London and other markets. These things marked what we have designated as the first step in agricultural improvement.

NEW BOOKS.—The Gardener and Practical Florist. Royal 8vo. Cloth.—Rigg's Experimental Researches in Chemistry and Agriculture. Post 8vo.—The Highway Surveyor's Guide. 12mo. Sewed.—General Highway Act. By A. Fry. 12mo. Sewed.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

FEBRUARY—1844.

AGRICULTURAL REVIEW:

OR THE PRESENT POSITION OF THE BRITISH FARMER.

(Continued from 32 page.)

The second step is now in the course of being taken—"science with practice" has become the motto of the farmer—reasons are asked and given for operations which, had they been performed some years ago, would have yielded no other answer from the lips of the operator than that his father (and probably his grandfather) had done so before him—that it was "the custom of the county to do so."

Now, however, an anxious spirit of enquiry is abroad: farmers are not satisfied that things are "and therefore so should be"—they insist upon knowing why. Few men have a wider field for enquiry than those who study agriculture. Chemistry, botany, geology, that part of zoology which treats of the various breeds and the habits of domestic animals, and eutomology so far as the insect tribe is concerned in the injury or destruction of his crops, must largely engage the attention of the accomplished agriculturist, in addition to the more practical details of rotations of crops—engineering so as to enable him to lay down his drains in the most economical and useful manner; and mechanics to an extent sufficient to enable him to appreciate the advantages resulting from improvements in the construction of implements: a *general* knowledge upon most of these points which the Scotch farmer, through his cheaper and better education, is able to obtain, give him advantages which the mass of English farmers do not possess, and which lead him to conclusions in reference to the action of manures upon plants, and the value of atmospheric air and of the various gases to vegetation, which have been found in the main to be tolerably correct: hence your Scotchman is an advocate for subsoil ploughing, as a means of increasing the depth of his active soil, and admitting the air to it freely, (a practice condemned by some practical English farmers)—hence he encourages chemical research, in the hope of discovering cheap substances, the constituents of fertile soils, which may be applied in quantities, to over-tilled lands, sufficient to restore their fertility—hence he drills, knowing well that the difficulty of cleansing lands sown broadcast is much increased; and knowing too that no soil will produce at the same time a crop of weeds and one of useful vegetation. The Scotch farmers have too, independently of these valuable practical illustrations, read their English brethren a lesson upon the tenure, by which their farms are held. They have established a corn-rent payment upon leasehold occupations, which enables them to meet the times by sharing with their landlords the loss or profit of *fluctuating* markets; and by making all necessary outlay for improvements themselves, they have relieved the owner (having probably, in consequence of settlements, no greater interest in the land than for his life) of the necessity of appropriating the annual income of his estates, from which provision must be made for his younger children, to the maintenance of the farm for the benefit of his heir: this arrangement, it will be at once perceived, imports the necessity for the possession of much money on the part of the tenants, and that the farms should be of a size likely to induce men of capital to embark it in their cultivation: this, in many districts, has been the means of making the tenant-farmer what he really should be, a man of substance and intelligence, capable of making the most of his farm, and obtaining from it a succession of abundant crops without deteriorating its value—affording employment to the labouring population around him, and setting a praiseworthy example before them of careful industry, and a love of order. That the example thus set by the farmers of Scotland will be speedily followed in England there is no doubt; but whether it will be in the persons of the present race of farmers is much more questionable. An association, powerful from its wealth rather than its numbers, seeks to instil into the minds of the *landowners*, that there is no necessity whatever for the class of tenant-*landholders*—that the profits obtained by that class from the soil ought to, and in fact does, belong to the lords of the soil, who should themselves be the growers of corn and other products; whilst in the hearts of the farmers they would, serpent-like, sow seeds of mistrust of their landlords, telling them they already obtain more from the land than is their due, and that a direct competition with the growers of foreign corn would have the effect of lowering rents, and nothing more. To a certain extent the Anti-corn-law League believed it had succeeded with the farmers, a reduction of rents being at all times a irresistable bait; but, whatever the effec of the farmers' first impression, the presen unequivocally expressed intention of th several counties which have formed protection societies affords an assurance tha all will yet be well—they have seen throug the flimsy guise of prospective benefit t themselves, with which the League hav veiled its real intentions, and that *No minister will venture upon a course which wi assuredly go the length of pauperising whol districts.*

Leaving, however, the selfish agitatio of the anti-corn-law league, and reverting to the recent improvements in Agriculture, we shall find that draining stand foremost in point of permanent value—i the dry climates of eastern counties, irrigation is the farmer's first care, and wate is collected for that purpose at an extraordinary cost; whilst in this, our "islan home," no less cost is required to get rid o our superfluity of that element. That draining is not in the strict sense of the term recent improvement, may be objected b some—we freely admit it—it is not the mer act of draining which we lay claim to as recent improvement, for it was performe in many parts of the world ages ago; bu we do claim, and have a right to conside the system under which our soils are no relieved from excess water as really ou own. The tiles—the tools for cutting th drains—the certainty with which the depth direction, and frequency of them are lai down—the cost per acre, and the permanent mode in which the whole work is performed, belong to the present day, and o which the present race of farmers hav every reason to be proud.

Subsoil ploughing as an adjunct to draining and a means of increasing the depth o thin soils, stands next to draining, and i altogether an improvement of the presen day; it is true the mole plough had bee invented, and in some districts used, bu inasmuch as its effect was not by any means commensurate with the labour and cost of its employment, it fell into disuse; of the subsoil plough, however, those who have used them speak in the highest terms—breaking up the hard bed upon which the active soil rests—rendering it permeable to a depth quite sufficient for the roots of any crop, and allowing the air and soluble manure to penetrate so as to fertilize that portion of the soil, which had it been turned up in the course of tillage, without subsoiling, would have been worse than barren, for it would have produced weeds and nothing else, justify all that has been said in its praise. We hear it objected to subsoiling, that it allows the manure to escape from the active soil, and to pass altogether away from the roots of the crop—that the *face* of the land ought not to be broken, for it maintains the fertility of the active soil. To this we would reply—Is a deep soil more valuable than a thin one? If so—ought not any and all means be resorted to which shall increase the depth of it? If you have soil of (say) five inches, upon which you do not dare to throw up any of the subsoil, and if after subsoil ploughing and one course of cropping, you find you can with advantage throw up to the surface three inches of the subsoil, thereby increasing the depth of your active soil from five inches to eight, will you still deny the advantages of the system?

Another improvement in husbandry, from which the most important results will, in our opinion, arise, is the shed-feeding of cattle and sheep; for this custom we are indebted to the Flemish farmers, who, in the care of their stock and economy in the management of fodder and manures, have taught us a useful lesson, which we seem well inclined to profit by. In some seasons and on some soils, cattle whilst depasturing are said to "eat with five mouths," or in plain terms, they destroy as much herbage with each foot as *they take up for their* sustenance,—and practical experience has proved that more than *double the quantity* of stock may be maintained from the same extent of pasturage, if the fodder be cut and fed to them in the house, than if the land be grazed—what further inducement then need we have for pursuing the practice? Yet we have a still further inducement than thus doubling our profits from the soil—we may very nearly double the quantity of manure, a consideration of equal importance with the one just alluded to—and besides this, we have the manure at hand capable of being taken care of, so that its value be not lessened, and of being applied wherever it may be most required—it is true, according to the experiment of Dr. Traill, of Edinburgh, *milking* cows, which are stall or shed fed, will not yield so much cheese, as those which are depastured; but they will, on the other hand, yield more butter. *Feeding* beasts and sheep it is now settled by repeated experiments, will, on the consumption of one-fifth less food, make in the house one-third more weight than if allowed to work for their food in the open field.

There is an evident disposition on the part of many of our experimentalists to carry the system still further, and to insist upon the great superiority of cooked food over raw. We noticed in our last a lecture delivered by Mr. John Coleby, surgeon, before the North Walsham Farmer's Club, upon this subject, to which we invite attention. There is no doubt whatever that, by the operation of cookery, food is rendered more nutritious and therefore more valuable. Whether, however, the cost of cooking being set against the increased value, any decided economy will be obtained, is a question not yet sufficiently tested to enable us to pronounce positively upon the subject. Some animals, pigs for instance, so absolutely require, from their peculiar habits, cooked food, that to deny it them on the score of cost would be to doubt the experience of all past ages upon the subject, and to subject the doubter to an almost total loss of his bacon.

We have already remarked that chemistry, in our opinion, is an essential part of the study of an accomplished agriculturist, we think so because we find the old modes of adding fertility to soils rapidly displaced by new—various chemical ingredients have been found to possess astonishing fertilising properties. Chemists having ascertained of what substances the most valuable natural manures consist, at once turned their attention to the production of mixtures in which those substances are contained, in proportions agreeing as far as may be with the natural productions—and although a man may not carry as much of these prepared fertilizers in his pocket as shall manure an acre of ground, as some have facetiously asserted, yet abundant crops may be and are secured at an expense of manure and carriage infinitely below what has been hitherto contemplated. How far future discoveries will tend to extend our acquaintance with the secrets of nature in her wonderful adaptation of inorganic substances to the growth and food of plants it is impossible to calculate, but we profess ourselves believers in the almost unlimited extent to which science is capable of carrying us in our search amid the interesting truths of natural philosophy.

Looking at the probable situation the farmer may hereafter hold in reference to his landlord, there is much cause for congratulation: what may have hitherto resulted from a sense of dependance—that feeling which formerly arose partly from confidence in the high honor of a landlord, and partly from the precarious nature of the tenure, under a tenancy-at-will system, will give place to the sentiment of a community of interest—more binding because coming more home to each party, under a leasehold occupation upon a rent fluctuating with the value of produce, than is possible under any other form of tenure—the interest of landowner will then be identical with that of occupier, each will be moved by the same means, each affected by the same causes—differences in politics will sink beneath the weight of identity of purpose and of action, and churchmen and dissenters will each find that in the soil they are united by a bond far stronger than fanaticism ever wove.

There is another point of view in which the relation of landlord and tenant may be considered. With a leasehold occupation the improvements upon a farm will assuredly be left to the tenant—and every inducement will be afforded him at the commencement of the term to lay out judiciously such an amount of money as may be consistent with the state of his farm and the length of his lease. The advantages to the landlord resulting from this arrangement, we have before hinted at—they are obvious—to the tenant they may be said in a few words to consist, in heavier crops, and cheaper because easier cultivation—advantages of which he alone will reap the benefit.—*(To be continued.)*

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LAND, LABOUR, AND MONEY,

THE THREE ELEMENTS OF NATIONAL PROSPERITY.

No man who bestows even a passing thought upon the present agitation for the repeal of the Corn-Laws but will be fully prepared to admit that the value of land and labour in this country must, in the event of such repeal, fall to some considerable extent; or, if he comes not to such conclusion, our present object is to help him to it by means of such arguments as have weight with ourselves, and which we think should have weight with him. In placing them before our readers our opinions on the various points arising upon a full consideration of the subject we will be as concise as possible.

Our isolated position as a people—

our peculiar position in reference to our public burthens, and our habits of life, from the prince to the peasant, have been hitherto the reasons why our land and our labour should not be cast into the general market of the world; why, for instance, an acre of land in Suffolk, should not be set to compete in production, and therefore in value, with an acre of land in Poland; why an English labourer or artisan should not be compelled to make and sell the articles in which he deals as cheaply as they can be forwarded to us from abroad. The above reasons having moved us hitherto, the question now to be decided is, are we right in *still* saying that we cannot enter into competition with foreigners in these respects, and that the same reasons should actuate us now. Let us take each separate position as we have advanced them, and enquire, First, How we are affected by our isolated position? Wherever a country is so situated that its climate shall have a considerable degree of dryness and certainty as to its seasons, that country, supposing its soil to have the requisite fertility, is best adapted to the production of wheat, and will, in an average of years, be more valuable, acre for acre, for the growth of that crop, (supposing other circumstances entering into the cost of production be the same,) than another country in which the changes of the seasons are uncertain, and the atmosphere more loaded with moisture. Islands are invariably, from the circumstance of their being surrounded by the ocean, more humid and uncertain in their seasons than continents; (hence continental countries are better suited for wheat-growing than those which are isolated;) and to this circumstance we shall find the perpetual change of our climate rendering the production of sound dry wheat precarious, and hazarding in a great degree the abundance *of that* crop, either from bad seed-time or bad harvests, is due. Is any man prepared to gainsay this and to assert that in an average of seasons, upon fair medium soils, the profit from English and Polish or German wheats, per acre, *can* be the same?

Secondly, Our peculiar position in reference to our public burthens. Is the soil so taxed in any other country under heaven as in our own? and is it possible, where the rate of taxation on the land is proportioned not as two to one but as five to one, that the soil, labouring under a load of taxes described as five, *can* compete with soil bearing a burthen so light as to be described by the figure 1, supposing in all other respects they are equally circumstanced. Again, can this taxation be, in any sensible degree, diminished?—will the employment of foreign land and labour so increase the demand for our own as to render poor-rates less?—will tithes be relatively lower?—will highway rates or church rates be less?—will county rates vanish, and turnpike gates be utterly abolished?—will the land-tax redeem itself?—we apprehend not, nor do we apprehend any appreciable reduction in any of these charges.

Thirdly, What is the difference in the cost of labour induced by habits of life? Our free-trade economists tell us that an Englishman can do twice the work of a Polish or Russian serf, and that even supposing he were paid twice the wages, yet the amount of work performed bearing an equal ratio, the cost of production in labour would not be greater here than abroad. This mode of begging the question we shall not for a moment submit to; it is not twice the wages which an Englishman expects to earn, *and really requires*, but somewhere about four or five times the amount,; and no reduction which can be effected in house-rent, clothing and fuel, or in *wheat*, *sugar*, *tea*, and *tobacco*, as advocated by the free-traders, will avail to make less than that proportion necessary. This being the case, the cost of production so far as labour is concerned, will be ever against us, even under a free-trade system, in the proportion to two to one—as to the burthens on the soil in the proportion of five to one—and in the average quantity and quality, and consequently the profit from our wheat, per acre, in a degree so great as to be almost incalculable. If our seasons could be changed—if we knew to a day when the frost would set in, and when it would leave us—when the seed time would begin, and when it would end—if our land bore but a merely nominal taxation, and if our labourers could live upon black rye bread; clothe as cheaply and lodge as miserably as in the corn-producing states of Europe, we might—nay, we *could* contend with those states in a race of prices; for our isolated position would then be to us a valuable "protection;" but as it is, or as under a free-trade system, house-rent, clothing of the kinds our people are accustomed to and require, and fuel, will be to the full as costly as they are now, and no relief in the reduction of the prices of wheat, or of sugar and tobacco, which can be afforded, will counterbalance them. A labourer will not be able to live, even then, as he ought, and as he now does, and maintain his family, upon less than a shilling a day; and in the great corn-producing states of Europe, if we put the money-value of labour at one-fourth that amount we put it at its maximum. Under these circumstances what must result—with our climate as it is—with our public debt and the charges upon the soil as they are—and equally important, with the habits and requirements of our people, so unlike *those* of the labouring population of other countries—what, we repeat, must result? evidently this—that as the charges upon the land will not come down the value of it must, if it is to be tilled at all—and that as the labour of foreigners is brought into direct competition with that of our own people, we must be prepared to offer it on something near the same terms.

Having considered then and proved that land and labour must fall in value in the event of a repeal of the protective duties, and having shown that such falling would not enable us to compete with foreigners in the productions of the soil, let us turn our attention to the other element of national as well as individual wealth—money.

Now money, whether in the form of income, or of accumulated capital, must of necessity increase in value as land and labour fall; for as land and labour enter so minutely into all the wants of the people, if the value of them falls the value of money will rise in a just proportion; to illustrate this position:—A man has £200 per annum, or has £2000; whilst the value of land and labour shall be represented by the figure 2, he will be able to procure just twice the quantity of land or of any of its products, and twice the amount of labour, he would if their value were represented by the figure 4. Now if the repeal of all protective duties has the effect of reducing the value of land and labour in this country one-half, or to any other given extent, it follows that in that proportion exactly will the value of money rise. The agitation then of the free-traders has placed the people of this country under exactly the banners we should expect to find them, the landed interest and labourers on the one side, and the capitalists on the other, the latter seeking to increase the value of their money by depreciating the value of the possessions of the two former, in which they are joined by those who, though not capitalists, are yet consumers of the products of the land and the labour, and are naturally desirous of having these products reduced as much as possible in value, upon the true coffee and cotton principle of, "we are all for ourselves in this world," which, as opposed to the sound old maxim of, "live and let live," we will expose in a future number. O.

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THE CULTURE OF THE WASTE SANDS OF SURREY.

(Continued from page 7)

In your last number I called the attention of your Readers to the capabilities of the uncultivated lands of Surrey; permit me again to call your notice to the subject. The expenses of cultivation is the most material feature in the occupation of land for the purposes of agriculture: these can now be much reduced by adopting improved machinery, saving considerable horse-power, and adapting the food supplied to the taste of the several crops.

It is true that the best land has been taken in and cultivated, but our population should urge us not to stop here, increasing as it does so rapidly every year: therefore, before we send our able-bodied labourers away, and expend much parish money to do so, and this for the purpose of fertilizing other countries, we should see what we have got at home and even close to our doors.

Those who have not seen the ocean of sandy surface so near London, as has been described in my former letter, would do well to take the South Western Railway to Shapley Heath; they would then ease themselves of any Malthusian ideas they may have entertained that the population is so far increasing that there is scarcely elbow room enough in England.

Now, it is a fact, that although the sands have been so much *neglected in Surrey*, in Norfolk they have had the cultivators' best attention. What Lord Leicester could not let 60 years ago for 5s. per acre yearly rent, and had been let at 3s., will now let for 30s. or 40s. per acre rental, which improvement has wholly taken place under the direction of the late spirited, talented, and Noble proprietor. It was thought wheat could not be grown on this land: the district is now an exporting instead of an importing one for wheat as it was formerly.—(See the "Journal of the Royal Agricultural Society," vol. 3; also vol. 4, "On Lord Portman's Improvements on Waste Lands in Dorsetshire.")

It is not generally understood by farmers, that of all the earths taken in by vegetables to form their structure, that of sand is the most abundant, for the straw of grain requires quite half its weight to consist of that ingredient.—(On this head, see "The Food of Plants," published by Ridgway.)—The land then, as a medium for conveyance of food, requires only a judicious tillage and the other necessary ingredients to give it energy: of these, air and water are the principal, and those which may be intercepted in their progress to the rivers and seas, and brought to the land, that our people may be employed, many of whom must be kept whether they are employed beneficially or not. Here then on these sandy wastes is a fine field as sites for our Workhouses, our Prisons, our Barracks, our convicts, or would-be emigrants, and our Cemeteries.

Of the expenses, most of the sandy land, after it has been trenched for a year or two, may be cultivated with the spade or fork without putting a foot to either, and it may also be ploughed (with the light instrument, drawing only 13 stone, made at Reading) with one horse only, thus making the single ploughing to cost much under 10s. per acre. This is one of the most material features in the tillage; and all others following in the same proportion, a deep tillage may be had by passing twice in the same furrow. Another feature in the cost of light land tillage is the expense of drainage, for in this scarcely any is required. If the cultivation is deep, the superabundant waters get down out of harm's way, there to be husbanded for the service of future crops; for it will come up again when the surface vegetation requires the same. This is done by the united attraction of the sun's rays and the roots of the growing vegetation. This principle is known by the capillary attraction; it is only what falls from the atmosphere that it is essential for the farmer to provide for in his tillage. No doubt there are parts where the inclosures of waste have not paid the outlay in its cultivation; but this is more generally to be attributed to the injudicious management of the proprietor—not the fault of the land, but of the man; for nothing can be more injudicious than to pare and burn the thin vegetable surface of a sand, reducing it to sandy ashes and thus distributing as smoke the little *humus* (vegetable decays) that was in the soils to the surrounding districts; supplying perhaps to the leaves of trees and shrubs the carbonaceous matters thus dissipated; and these ashes are left in lumps for weeks or months, the rain washing out the only fertilizer left—viz, the salt of potash—making the ash of as little worth as expended tea-leaves; and then, when the ashes are spread, and a crop raised, the farmer can see where the fires have been by the superior luxuriance of the spots, for surrounding them there is scarcely anything; so to be sure the spots can be seen, for there lies the alkali. Moreover, this same inclosed land is continually dressed with similar ashes to what had been burnt on the surface, or it has a dressing of merely rotted straw, decomposed in the yard by being trodden to pieces by wintering cattle. Those that are fed on straw must void straw; and this consisting of silex and alkali in the proportion of five-sixths of the whole weight, is it any wonder that the inclosure does not pay the outlay? How should it, when only two out of the very many foods repuired are supplied?

In conclusion: I may quote as a piece of advice to all those who cannot make their system of cultivation yield them an adequate return, the following from the introduction to the Epitome of Evidence taken before the Committee of the House of Commons on Agricultural Distress, in the year 1836:—

"Many are in great distress, but a more pernicious auxiliary, a more unsafe guide, they cannot take for their deliverance, than that man, who, expressing strong sympathy for their distresses, advises them not to consider their rents, not to avail themselves of those improvements in farming which tend to increase production, or diminish its cost, not to rescue themselves by their own exertions, as the merchants and manufacturers of Great Britain and the agriculturists of Scotland have done before them; but to continue in the habits and practices of their forefathers, and to look for their safety in some hocus-pocus of protection, or other mysterious benefit which Parliament is to work out for them."

Bagshot, Jan. 12, 1844. E. J. L.

In what consists the Fertilizing Property of Bones?

Under the above query a writer in the *Gardeners' Chronicle*, of the 3rd inst., has an article in which he labours to prove that the gelatine or organic matter contained in bones affords the nutritive property, and not the mineral or inorganic. The question is really an important and an interesting one, and well worth the consideration of all Agricultural chemists, as well as those farmers who claim to be considered scientific. I incline to the theory of Dr. Madden that the fertilizing property of bones is due to the phosphates they contain, principally the phosphate of lime: the reasons for my this I will explain in as few words as possible. Bones which had been boiled for the express purpose of extracting from them all the gelatinous matter they contained were applied to a piece of pasture, on a heavy clay soil, and marked off: at the same time an equal quantity of fresh bones were applied to the adjoining land. Fourteen years have passed away since the application, and still the boiled bones have an equally beneficial effect upon the herbage; but it may be said that this is not conclusive, because the time has not been sufficiently long to prove the greater durability of the fresh bones—it may be so; in a year or two more the boiled bones may give it up, and the fresh bones come off victorious. But I would suggest the following experiment:—Let a quantity of bones be boiled, as in the glue manufactories, till all the gelatinous matter is extracted—let the gelatine then be used for turnips, the bones being crushed and applied to that purpose also, the soil and number of plants being the same in each case; the result would prove to which of them the fertilizing property of bones is most due. I believe it quite possible (from the bones of old animals particularly) to obtain, by boiling, every gelatinous particle they contain, and that it is not necessary to burn them in order to extract it. I know the bone-boilers consider they have extracted all the gelatinous matter when they dispose of their refuse bones: or an experiment might be made with young bones, as of a calf for instance, and old ones, weight for weight, applied to the same extent of land for turnips, and the result noted. Young bones, it is well known, contain a far greater quantity of gelatine than old ones.

B.

NITRATE OF SODA, &c.

Mr. Grey, of Dilston, whose experiments are always deserving of much attention, is the author of the following paper on Nitrate of Soda, Gypsum, &c., which was read at the Highland *Society's meeting, two years* ago. That this Nitrate is an exceedingly valuable dressing for grasses has been long placed beyond a doubt—more valuable, we incline to think, in proportion to its cost, than any other saline preparation: sown upon mowing grass, in the month of April, it pushes forward the crop, which comes away (from light land particularly) heavier and earlier than by the aid of any other fertilizer. Sulphate of Ammonia is a very powerful stimulant, but its cost is quite equal to that of Nitrate of Potash, (saltpetre) also very valuable for forcing hay:—

"On the 28th April, 1840, I sowed upon each alternate ridge of a plot of land consisting of four acres, of good gravelly loam, which had lain three years in grass and was thickly covered with plants, nitrate of soda at the rate of 1 cwt. per acre, having ascertained the exact contents of each ridge and divided the nitrate accurately into the right proportions. To some of the alternate ridges I applied gypsum at the rate of 10 bushels per acre. To one ridge I applied both the nitrate and gypsum, upon the principle of "the more good things the better;" but the result, in this case, proved the maxim fallacious. And three ridges were left without any application whatever. The Grass to which the nitrate was applied assumed in a few days a darker colour than the other, rose quickly above it in height, came earlier into seed, and was sooner fit for cutting. The plot was all mowed and made into hay at the same time, great attention being paid to keep the produce of each of the ridges intended for the experiment distinct. The following is the weight of Hay produced by each plot, and at this time the aftermath of those ridges to which the nitrate was applied is obviously better than the others:—

Nature of Manure applied.	*Produce per Acre,* calculated from that of 112 sq yrd.
No manure	2 tons 81 stones
10 bushels of gypsum per acre....	2 „ 81 „
1 cwt. of nitrate of soda........	3 „ 146 „
10 bsh. of gyp. and 1 cwt. nit. soda	3 „ 125 „

"The cost of the nitrate on the ground was 22s. per cwt., and the increased value of Hay per acre, as it stood in the fields, would be from £4 to £5.

"From the many experiments which have been made, and which have all proved more or less beneficial, no doubt can be entertained that nitrate of soda is generally efficacious in the production of grass; but several experiments may yet be necessary to ascertain on which description of soil and to what class of plants it is most so, and at what particular stage of their growth it is to be applied with the greatest benefit. I am inclined to think, from the little experience I have had in the matter, as well as from the consideration that it does not act through the medium of the soil, as a manure, but rather as a stimulus to the plants, that it ought not to be sown upon the grass until it has risen considerably from the ground, and the blades are sufficiently evolved to derive all possible benefit.

"I applied nitrate of soda to a row of Potatoes, at an early period of their growth. The tops soon showed the effect, and far outstripped the adjoining rows in growth; but when the Potatoes where taken up the produce of that row was found to be less than that of the others, both in weight and measure.

"The first action of the Potato plant is to throw out its top. The roots make their growth at a later period. It seems in this instance that the stimulus of the nitrate had expended itself in the earlier process, and that the roots, instead of being benefited, had suffered by the application—probably from the greater shade and weight of top.

"I applied nitrate and gypsum also to alternate ridges of different kinds of grain and at various stages of its growth, but the quantity of rain that fell in this part of the country, both previous to and during the time of harvest, had the effect of producing so much straw, and of laying the corn so flat, that it was found difficult to cut the plots so as to keep the produce of each perfectly distinct, and was also in other respects so unfavourable to the experiment that I cannot reckon upon the result being very correct and satisfactory. In one case where the Barley was very bulky, and in consequence much lodged, the grass seeds where found to be weak and worse than in any other part of the field; but in another instance the reverse of this was the case. The crop was a thin one of winter Wheat on poor clay land. Four ridges were sown with nitrate when the Wheat was a foot high; little effect was perceptible during its growth, save in a darker shade which it assumed, as is common to all crops where nitrate is applied; and on being cut those ridges produced so few sheaves more than the others, that I was not induced to keep their produce separate; but in the spring of the following year, the new grasses upon them were found to be much better than upon any others in the field. The pasture was heavily stocked with ewes and lambs, and eaten bare, the sheep giving those ridges the preference. When the lambs were weaned, the pasture was cleared of stock for a fortnight, when the same thing was repeated; *the Grass on those ridges* again took considerably the lead of all the rest, and was agai preferred by the sheep when they returned to it This was a result which I had not anticipated and proves either that the effect of the nitrat continued in operation during the followin season, or that its effect in the first year upo the grass was such as to nourish and strengthe the plants so much as to cause them to stan better through the winter, and to shoot ou much more vigorously in the spring. Th latter is, I think, the more reasonable conjecture."

In addition to the foregoing by Mr. Grey Dr. Madden observes of this salt:—

"Nitrate of soda has been much and deserv edly praised as a manure, and it has almo universally been declared to be equal to, and t act in a similar manner with nitrate of potas (saltpetre,) in which case it would have the advantage of greater cheapness to recommend i But in the above statement it is quite forgotte that the manure acts in two distinct ways: 1s as a nitrate; 2d, as containing soda. Now, a regards the first action viz., as a nitrate, thes two salts can replace each other without the lea difference in their action; but as respects th second mode of action, viz., the supplying th plant with soda, it is clear that they differ a distinctly as saltpetre does from common salt and practice has proved this, for in more tha one instance a considerable difference has bee shown in the result obtained by the two manure Thus, Professor Johnston mentions the following result of an experiment at Erskine, nea Glasgow, in 1841, upon Hay, with the two nitrates, in two different fields—the one being light soil, the other a clay. In the light so the nitrate of soda produced 3 cwt. more Ha per acre than the saltpetre, whereas, on th clay, the saltpetre exceeded the nitrate of sod by ¾ cwt. nearly; and it is well worthy of re mark, that common salt, another compound soda, was also employed in both cases, b yielded exactly 5 cwt. more upon the sand tha on the clay; thus proving, we think, as well a chemical analysis of the soil could have don that the clay soil contained naturally more sod than the sand, and likewise probably that t sand was richer in potash. A similar case likewise mentioned by Dr. Daubeny, of Oxfor where the nitrate of potash exceeded the nitra of soda upon Wheat by upwards of 4 bushe per acre, and in which case the nitrate of sod produced no effect whatever; in fact, an equ portion of soil, without any top-dressing, pr duced 24 lbs. more grain than that upon whic the nitrate of soda was used."

A correspondent in the *Gardeners' Chronic* also observes, "In November, 1842, a field six acres was sown with wheat. Soil, a strong clay; the previous crop, Beans. I think it was owing to the abundance of rain in the spring of 1843, that the plant assumed a sickly appearance. Wishing, if possible, to recover it, I applied, in May, as a top-dressing, 2 cwt. of nitrate of soda per acre, to half the field. To the other half I applied guano, allowing the same quantity per acre. In a few days the Wheat on the land on which the nitrate of soda was sown was visibly altered, and soon had quite a healthy and rank appearance. That to which the guano was applied did not improve at all, and at the same time it was harvested had its original unhealthy and stunted appearance. The straw of the plant to which the nitrate was applied stood on an average seven inches higher than that in the other part of the field, the grains were likewise considerably larger, and the ears better filled. This fact I mention to show that as a top-dressing for wheat, I did not find guano answer; but when hoed, harrowed, or drilled in, I understand from those who have tried the experiment, its effects are highly beneficial."

Salt.—The transit of salt, in large consignments from Cheshire, by railway to Hull, for exportation, has led also to the arrival of large quantities for sale, and which are readily purchased by the farmers of the adjoining districts, for agricultural purposes.

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AMERICAN PERIODICALS.

We have, from time to time, delayed expressing the great satisfaction with which we received these valuable records of what is doing in the great cause of Agricultural Improvement by our brethren across the Atlantic.

It would be invidious were we to particularize where all are very good; but of the *American Agriculturist*, the *Central New York Farmer*, and the *New Genesee Farmer*, it becomes us to speak in terms of much commendation. To the conductors of the mass of American Farmers' papers we may be excused perhaps offering a word of advice—it is this; that prices current, relating to the produce of the soil, should be in every case correctly given, and that periodical reports of the crops, &c., should appear —these two points *carefully* attended to would render the various emanations from the American press more *interesting to the* British Farmer, and be not unlikely to induce a circulation on this side "the great waters."

The *Central New York Farmer* appears with the new year in an entirely new dress, and amongst other useful matter we find in its pages an "*Agricultural Report for* 1843," from which we make the following extracts:—

Wheat.—On the breaking up of winter and nearly up to the time of harvesting, this crop presented rather an unfavourable and discouraging appearance. In many sections of the country the winter had been unfavourable, and in some sections it had been smothered with the immense weight of snow, and in others frozen out in the spring. The plant was standing thin upon the ground, and in some sections the Hessian fly made its appearance, while in other sections the grain worm threatened to destroy the crop; still, contrary to the expectations of all, little injury was sustained by the insect; the heads of the grain were large and long, and generally, particularly in the western states, the berry was large, plump and of first quality. In this section however, some injury has been sustained from rust or mildew. It is conjectured that the wheat crop of the United States the past year was greater than has ever before been produced. A great breadth of land has been sown the past fall with wheat. "The practice of sowing on clover or grass leys, without fallowing, is gaining ground, and many of the best crops taken off the past year, were grown in that way. With clean ground and a proper rotation, this is doubtless the best method of raising wheat, and this condition in farming is what all must arrive at."

Potatoes.—In the northern and middle states there is perhaps, no crop that furnishes more food, particularly for the poorer class of inhabitants, nor one, the loss of which, would be more seriously felt than potatoes. The crop of the last year has been a light one, not more than half an average yield—the tubers small, and few in number and many were diseased and perished soon after having been dug and stored away. The cause of the disease or sudden decay as not as yet been satisfactorily accounted for. It has generally been attributed to their not ripening perfectly and having been harvested prematurely. Our opinion, however, is that it was caused by the superabundant moisture of the soil, in which they were allowed to remain too long. In support of this, we would observe that in one of our fields, which is low and a retentive soil, we were compelled to leave a part of it for ten or twelve days after the first part were harvested, before we could finish, and many of those last dug were affected and soon rotted after exposure to the air. The tops of our potatoes in one field, which were planted early, withered and died long before we supposed the roots had ripened. They were dug early and immediately stored in the cellar, with very little exposure to the sun, and no trace of disease as yet has been discovered, while others in the same neighbourhood, under the same circumstances, but left until a later period before they were dug, have nearly all been destroyed. It does not appear to be particularly confined to any particular variety, but the Pinkeyes and Mercers seem to have suffered the most. In some cases, where the diseased potatoes had been fed to hogs and cattle, death ensued.

The Dairy.—This branch of husbandry is being considerably extended among us, and if rightly managed, would probably afford as sure a profit as any other department of husbandry. The gains may not be the greatest, but they are obtained at the least risk and expense. Cheese has sustained a fair remunerating price, while butter, in consequence of the imperfect manner it is too commonly made, has ranged low.

Pork—Has not been very plenty, but the quality very superior, and consequently sustained a fair price. One need but to glance at the pork now brought to market, to be convinced of the great improvement in the *breed* of hogs all over the country.

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RESULTS OF SUBSOIL PLOUGHING.—Mr. C. N. Bement states that a few years ago, he subsoiled part of a piece of ground which he planted to Indian corn. The piece was on a light, loamy or sandy knoll, and he subsoiled it in "strips," leaving alternate strips not subsoiled, all being manured alike. He ran the *subsoiler* about eight or ten inches deep. The season proved very dry, and where the subsoil plough was *not* used, the corn was so burnt up that it produced little or nothing; but where the subsoil plough was used, the corn remained green and flourishing through all the drouth—the strips were plainly seen at a distance, and the subsoiled part produced a good crop. Mr. B. made a similar experiment on carrots, and the results were even more strikingly in favor of subsoiling than in the case first cited.—*The Cultivator, American Paper.*

NEW ARTICLE OF FOOD FOR ANIMALS.—Mr. E. Rich, of Troy, N.H., has communicated to the Keene Sentinel, the result of some experiments made by him on the value of the tops and roots of common Comfrey, *(Symphytum officinale,)* as food for cattle. Two cuttings in June and September, yielding six tons per acre of good fodder, and the root which should be harvested only once in two years, producing 2,400 bushels per acre. Experience showed both top and root to be very palatable and nutritious. Mr. Robinson, near Portsmouth, has also tried the plant for this purpose, and finds his stock of all descriptions to eat the tops when cut most greedily. His product was at the rate of eight tons per acre. This was on moist ground, which seems the best adapted to the growth of the plant. Mr. R.'s plants were in rows fifteen inches apart. This, we think, in rich ground would be too close planting. Comfrey is easily propagated by cutting the roots into sets, as is done with the potatoe. It may prove one of our most valuable plants for animals, but further experiments are necessary. They can easily be made.—*Ibid.*

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AMERICAN WOOLLEN MANUFACTURE.

WE copy the following from the *Cultivator,* an American Agricultural paper, of the present month. It will show the efforts making in the States to improve their wools and their woollen manufactures:—

Lowell, Jan. 10, 1844.

EDITORS OF THE CULTIVATOR.—I have examined the two samples of wool, and am of opinion that they are admirably adapted to combing purposes for the manufacture of *Mouslin de Laines.* The staple is long, strong and lustrous, qualities not desirable for felting purposes, especially the two latter. I judge these samples to be from Cotswold sheep, a breed which it is very desirable to propagate in this country, as the worsted business is just coming into existence. The secret of England's advance of all the world in the manufacture of worsted goods, lays in the fact of her possessing better breeds of sheep for the production of combing wools, and not from her superior skill in working them.

The worsted business in its various shapes, is to be of immense importance in this country, and it affords me sincere pleasure to be able to say to you that it has already been commenced in this state upon a liberal scale, by parties whose means and intelligence are a guaranty of its success. A great deal of talent and skill has been brought to bear upon this branch of industry, and if I am not greatly deceived, the time is near when old England herself will be astonished at our success. A number of hundred looms on mouslines are already in operation, and more in progress. In addition to the works already projected, a company is now being formed in Boston, with a capital of a million of dollars, for works on Mouslin de Laines; &c.

In reply to your inquiry about the kinds and quantities of wool used in the Middlesex mills, I have to say that we use about a million of pounds yearly, of such kinds as are considered in this country the choicest produced; say full blood Saxony, and Saxony mixed with Merino. We are very fastidious in the selection of our wools, both as regards the blood and condition; and in consequence, we are in the habit of paying prices which many manufacturers think absurd.

I am clearly of the opinion that no branch of agriculture promises better than the culture of wool, and I sincerely hope more attention will be given to it than has been paid for the last few years.

Yours, SAM'L LAWRENCE.

We cannot agree entirely with the writer that the secret of *our* advance in the manufacture of worsted goods is due to our breeds of sheep; however, the letter is full of interest as well to the wool grower as the manufacturer. LOWELL from whence the letter is dated, is doubtless the place of that name which is the principal seat of the manufacturing enterprize of the North American States.

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MAIDSTONE FARMERS' CLUB.

THE annual report of this club records the resolutions of the club on the various subjects discussed during the past year.—Among them are the following:—At the March meeting on the subject of feeding off wheat, it was resolved, "That it is the opinion of the members that no good is derived from feeding off wheat, but that the treading of wheat, or rolling it with the clod-crusher on light soils, is considered extremely beneficial, and that good crops have resulted from these operations, by which the wire-worm has been checked, and the soil effectually closed." On October 5th, the subject of discussion was the cultivation of wheat, which resulted in the following resolution:—"That on land where it is practicable, creasing or drilling is always preferable, as two bushels of seed thus used will be found equal to at least two and a half bushels sown broad-cast.—Dibbling, when labourers can be got to do it properly, will cause a great saving of seed and give greater employment. That in this district the quantity of seed usually considered necessary is from *two bushels* to two and a half bushels, according to the lateness of the season; but that the system of thin sowing, as recommended in Mr. Davies's recent pamphlet, appears highly deserving of consideration and experimental trial."

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BROMSGROVE FARMERS' CLUB.

AT a meeting of this Club an introductory lecture was delivered by Mr H. F. Fardon, "on the Advantages of Association for the improvement of Agriculture," in which the history of English agriculture was briefly given, its present importance enforced by reference to statistics, the duty and interest of nations and of individuals with respect to its improvement examined, the possibility of improvement urged, and the means of improvement inquired into; these are a remunerative price of produce, such equitable and proper arrangements between Landlord and Tenant as shall induce the latter to cultivate the ground in the best possible manner for the interests of both; and lastly, skill and knowledge in the farmer, to be communicated by proper education, and promoted by association. At a succeeding meeting "the advantages of lime as a fertiliser of land" were considered. All plants grown by farmers contain lime in a greater or less degree, which they must absorb from the soil. In a caustic state lime combines with acids in the soil, and some of the compounds thus formed are serviceable as food to plants. It also decomposes certain noxious compounds of iron, &c., which frequently exist in the soil, but it differs in its action according to the state in which it is applied. It hastens the decomposition of vegetable and animal matter, and thus has a tendency to exhaust the soil of these ingredients.

Two lots of Potatoes were exhibited at the meeting by Mr. Elliot, each containing the produce of six roots. They were grown near together under similar circumstances, each receiving a dressing of farm-yard manure. When up and moulded, a small portion of carbonate of soda was sown between the ridges of one lot, at the rate of 150 lbs. per acre. The lot undressed with soda weighed 2 lbs. 2 oz.; that which received soda weighed 4 lbs. 6 oz. The subject of Seed Wheat, and the best method of pickling and planting the seed, afforded matter for discussion at several subsequent meetings, at which it was resolved, "That there is an adaptation in different varieties of Wheat to different soils; and that the practice of annually changing the seed from one soil to another is a good one; and the arsenic, sulphate of copper (blue vitriol,) and salt, have been used with much success in the pickling of Wheat for the prevention of smut." A paper on "Wheat Sowing" was communicated at one of the meetings by Mr. Richard Smith, of Upper Hall, near Droitwich. On strong clay soils, that moulder and heave after hard frosts, he approved of sowing broadcast and ploughing in from 2½to 3 bushels per acre, the land being previously fallowed, because greater space is thus afforded for the roots. More seed, however, is thus required, and the crop cannot be so well cleaned. By drilling again, the seed is deposited at an equal depth, but the plants are crowded and the water is retained in the narrow channels made by the drill-share, particularly on strong soils and where the drilling is done lengthwise of the ridges. Mr. Smith recommends Lord Western's system of drilling, which is to have the heel of the common drill-share made four inches in width to scatter the seed that width in the row; a space of nine inches is left between the rows for tillage. Dibbling is the most perfect system, and will probably spread and become universal as population increases. All these remarks suppose the ground in a good state of cultivation, for if it is wet, foul, or poor, Wheat cannot be grown without loss.

Mr. Wright read a paper "On the utility of Leases," advocating well-adjusted leases on Corn-rents. In arranging these rents, the price of Corn should be calculated on an average of a certain number of years. The rent of a particular year should not be founded merely on the prices of that year; otherwise, the tenant may have the highest rent to pay when he has the least produce. A resolution was adopted by the club, expressive of their opinion, that the only sound system for tenancy of land is on the principle of leases for 7, 14, and 21 years on Corn-rents.

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HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

THE monthly meeting of this Society was held on the 7th inst., in the Museum. The first paper read was a report of analysis made of the ashes of peat from Berkshire, and from Kinblethmont, the seat of Mr. Lindsay Carnegie, in Forfarshire. Mr. Carnegie having tried, as a manure, the ash obtained from his own peat by burning, and finding it to produce none of the good effects attributed to the peat-ash of Berkshire, but on the contrary, to act as a poison to plants, Mr. Colvill undertook the analysis of the ash of both descriptions of peat, in order to detect any appreciable difference in their constituents, and this report is the result of his investigation: the elements of both ashes were found to be nearly alike, but the Kinblethmont ash contained sulphur and phosphorus in combination with iron, which the other did not, and which combination seemed to have produced the poisonous effects upon the plants observed by Mr. Carnegie. Besides this communication, a letter was read from Mr. Carnegie, descriptive of an experiment made by him with a manure denominated by Mr. Colvill a double ammoniated magnesian salt, which is stated by Liebig to be an essential constituent of the Potato. The experiment was tried in the garden, and the result was as follows:—1 drill 38 feet long by 27 inches wide, with 2½ pints gave 4 stones 7 lbs., or 14 tons 6 cwt. per acre; the same extent, with 2 pints and 20 loads of dung per acre gave 4 stones 7 lbs., or 14 tons 6 cwt. per acre: with 2 pints only, it gave 4 stones 11 lbs., or 15 tons 4½ cwt. per acre; while without manure it gave 2 stones 4 lbs., or 7 tons 7 cwt. per acre This substance is prepared by dissolving bones in muriatic acid, adding Epsom salts, and precipitating with excess of gas-liquor. Lord Strathmore then read a paper, in which, after noticing the neglect of peat-ashes, he described their value and utility as manure. It appeared from his Lordship's statement that the quantity, and most probably the quality, of peat-ashes, depend on the mode in which the peat is calcined. When peat is burned in the open air, a small quantity only of ash is obtained, some of the valuable properties of which are moreover suffered to be dissipated; but when the better sort of peat, which is that found at some distance below the surface, is cast at the proper season, dried, and burned in a kiln covered at the top, with a quick draught, the ash is greater in quantity and superior in quality, and the process is attended with little cost. When from 20 to 30 bushels of ashes obtained in this manner are spread upon an acre of green sward, they will produce as much herbage as a corresponding quantity of soot, at one-sixth the cost; and when such ashes are mixed with lime or fine sand, they are not only a superior top-dressing for upland or other meadows, and for Red Clover without Rye-grass, but they also prove a valuable manure for Carrots, Parsnips, or Mangold Wurtzel, on strong soil; his Lordship stated that one ton of peat, burned in a close kiln, would yield 14 bushels of ash. The last paper, which was read by Mr. J. Hall Maxwell, related to experiments with special manures, conducted by the land-steward of Mr. Fleming, of Barrochan. It formed the report for which the second premium of £30 was awarded to the essay-competition of last year. We can only notice a few of the more important conclusions at which the author arrived. He found that the nitrate of soda and potash, when applied by themselves, or in mixture, are beneficial to Potatoes and hay; but when applied to grain crops, especially singly, they are positively injurious in a moist climate, as, though the growth of straw is greatly increased by them, the sample of grain becomes lighter and otherwise deteriorated. He considers it probable that the silicate of potash would counteract this effect. Common salt, at a distance from the sea, is advantageous to grain crops as respects colour and plumpness, and also to grass and hay, although it does not cause a rush of growth like the nitrates. Soot differs little from nitrates in its effects on Grass intended for hay, but the dealer in hay gives less price for hay raised by soot. Sulphate and muriate of ammonia have the same effect as the nitrates. Sulphate of soda and magnesia act differently, and will not pay in most cases when applied by themselves to Potatoes or grain, but they do well when mixed with the nitrates. Guano may be successfully applied to every species of crop in the field or garden, and it always proves a most powerful auxiliary to farm-yard dung.

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ROYAL AGRICULTURAL IMPROVEMENT SOCIETY OF IRELAND.

By the report of the proceedings at a special meeting of the Council of this Society, held on the 15th inst., it appears that the owners of the bulls "Eden" and "Recruit" are to abide a fresh adjudication. Mr. Grey, it is said, is willing to submit to this, but Mr. Hill contends that he is entitled to the Medal and Challenge Cup, and refuses to comply with the decision of the Council. Legal means are talked of to compel the delivery of the Cup and Medal to Mr. Hill. Mr. Grey, as the defeated candidate at Belfast, will, no doubt, readily comply with any terms which may afford him another chance of success.

At the same meeting a letter from John Shaw Le Fevre, Esq., under secretary to the Board of Trade read, making enquiries as to the efforts of the Society, to promote the cultivation of the Phormium Tenax or New Zealand Flax, in Ireland, ordered that the secretary should inform him, that the subject, together with his previous communication, had been referred to the committee of the Northern Flax Society, who had reported thereon, and from their report, the council did not think it advisable to make any further experiments for the introduction of the Phormium Tenax, and its cultivation in Ireland, and that a copy of the above report should be sent to the secretary of the Board of Trade accordingly.

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ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a meeting of this Society, held on the 14th inst., amongst other things presented were the following:—The Duke of Richmond, 'The second report of the Morayshire Farmers' Club, on the result obtained in the application of bones and sulphuric acid employed as a manure;' Messrs. Kerr and Green, details on the sizes and prices of their iron-grated tile-ends, for preventing the entrance of vermin into drains; Mr. Baines, a communication on the modes of preserving milk; Mr. Stronge, a case of protracted gestation in a cow; Mr. Bellairs and Mr. Cochrane, papers on the economical collection of manures; Mr. Blurton, on his invention of a metallic churn; Mr. Charnock, papers relating to the Yorkshire Drainage Society; and Mr. Meyer, on the destruction of insects injurious to agricultural crops.

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THE YORKSHIRE AGRICULTURAL SOCIETY.

This important body publishes periodically a No. of its "*Transactions*," from the 6th of which we take the following "*Report of the Judges appointed to inspect the Farms entered for the Prize and Sweepstakes proposed by the Yorkshire Agricultural Society*, 1843."

This report is interesting as showing the various modes of culture adopted on the several soils, and the general economy of the several farms submitted to competition.

We cannot curtail the document. No extract will give a sufficiently accurate account of its contents; we shall therefore present it to our readers entire, satisfied that when they have the whole before them we shall earn their thanks:—

"My Lords and Gentlemen,—The inspection of the farms, which we were honored by your instructions to commence on Monday the 3rd July, has been completed. It may be proper to state, that after an extremely wet season, from the 4th May to the 11th June,—during which important period for preparing the land for the reception of green crops, little or nothing could be done,—the weather changed to an almost equally remarkable drought. The cultivation of turnips (and especially the swedes) was in consequence extremely difficult, and the period of sowing, was necessarily much delayed. This circumstance exemplified, in a striking manner, the advantage of always cleaning the land to the greatest extent the season will allow, immediately after the harvest. The farms which were submitted to our inspection (all situate within the prescribed limit of a crow-fly line of twenty-five miles from Doncaster,) we took in the following order of route:—

Occupier.	*Situate at*	*Owner.*	*Extent in acres*
G. Wentworth....	Woolley....	G. Wentworth......	255
T. C Johnson....	Chivet	Sir W Pilkington, Bt.	283
R. J. Coulman....	Wadworth	R. J. Coulman......	165
W. Newham......	Edlington	W. B. Wrightson....	299
T. Snowdon......	Marr......	Lord Rendlesham ..	430
B. Crowshaw	Byram....	Sir J. Ramsden, Bt.	300
H. Skelton	Wiumoor..	Henry Skelton......	203

"Left to our own judgment as to the interpretation of "'the best cultivated farm,'" we could only decide upon awarding the prize to the person who, in our opinion, adopted such a system, and carried out its practice in such a manner as, in the course of years, would tend to produce the largest amount of grain and animal food at the smallest expense per bushel and per pound. We think that *good* cultivation, and *profitable* cultivation are synonymous terms, and that this applies alike to the grass and to the arable lands. Our original intention was to have reported only upon the two farms to which we awarded the prizes, but the very superior cultivation of the whole of the lands which we inspected, is highly deserving of notice. On each farm there is some peculiar feature, that might be imitated with great advantage; for each exhibited something, in which it was superior to every other, and on none, though most fully and carefully viewed, could we detect an instance of waste or neglect.

"We commence with the farms to which we *have awarded* the first and second prizes, and shall then allude to the others, *without classi cation as to merit*, in the order in which pursued our route of inspection.

"Mr. T. C. Johnson has occupied the Chiv Grange farm eight years. It is land of excelle quality, situate near Wakefield, and well adapt for the four course system of cropping, which pursued upon it.

"Turnip Fallow.—The cleaning of this co mences as it ought to do, immediately after harvest. In January or February it is cover broad-cast, with manure that has been previou led from the farm-yard, (and to a considera extent decomposed,) at the rate of six tons the acre. This is immediately ploughed and afterwards intimately mixed with the s The turnip seed is drilled in rows eighteen inc apart, with twelve bushels of bones mixed w two quarters of ashes, or pulverized earth riched with liquid manure. Sowing upon level was evidently advantageous in the pres dry season, and the advantage of early worki after the last harvest, was strongly exempli by the clean and forward state of the land, withstanding the wet weather of May and Ju Some of the swedes are drawn, for the sheep eat upon the grass pastures, but the greater p of the turnips are consumed upon the la where they have been grown, more especia upon the lighter soil.

"Barley is drilled after the turnips at the r of thirteen pecks to the acre; about two-thi of the breadth are sown with eighteen pou of white clover, three pounds of rib grass, a half a peck of Italian rye grass per acre, sheep pasture. The remaining third is so with fourteen pounds of red clover, and hal peck of annual rye grass per acre, for mowi This course prevents the too frequent repetit of red clover, as it thus comes into use o once in twelve years.

"Wheat is the principal crop after the clo or pastured grass, though parts of the latter occasionally sown with oats or beans to v the grain. Be the corn crop what it may, i sown with the drill, and hoed, both for the mediate purpose of encouraging the growth the plant, and as a preparation for the succeed turnip fallow.

"Grass-Land.—In addition to the ave annual pasture of about forty acres of w clover and grass seeds, this farm posse about one hundred acres of permanent gr land, of very good, though not prime qua A portion of this is dressed every year manure, sometimes supplied from the farm- alone, but more generally enriched wit mixture of bones. Bones are used extensi on the grass-land. They are purchased f the manufacturers of size, after having boiled to extract the gelatine, and are obtained at one-third less price than those which have not undergone that process. Mr. Johnson is of opinion that their fertilizing qualities are uninjured by the extraction of the gelatine, but in this opinion we cannot concur. Three quarters of these bones, mixed with three cart loads of earth, are considered the proper dressing for one acre, and the period of application not material. The grazing department was well conducted. The Leicester sheep and short-horned cattle were suitably proportioned to the lands on which they were pasturing; though in one field we observed stall-fattened cattle too heavy for the soil on which they grazed. These we were informed were intended to have been sold from the stall, and had only been detained in hope of an advance in price. The immediate vicinity to a large and excellent cattle-market, has induced Mr. Johnson to rely more upon his practice in buying and selling than in breeding; he therefore avails himself of the constant fluctuation in price, and makes a frequent change of stock.

"Though this farm is generally dry from the nature of the soil and situation, yet there are portions of strong clay on the sides of the hills, both of arable and grass-land. These, to the extent of sixty or seventy acres, have been under-drained with tiles, at an average expense of four pounds per acre. The work has been done by Sir W. Pilkington, for which, by agreement, Mr. Johnson pays an interest of six per cent upon the expenditure. The cutting plough of Mr. Stickney, drawn by eight horses, has been recently tried, but the advantage was not so great as to give it the preference over manual labour. Wherever the lands have been drained, the necessity which previously existed for summer fallow is removed, and excellent turnips are produced.

"Linseed Cake is used largely with great advantage, as a substitute for turnips in the farm-yard; it is given to all the cattle. By this means the manure from the folds is doubled in value; and perhaps much of the superiority in bulk and luxuriance of all the growing crops may arise from this excellent practice. They were full and regular in every part. It has been observed that Mr. Johnson spreads his manure for turnips over the land in January and February. This is a peculiarity in management. He keeps his fold-yard manure nearly twelve months before using it; as from the large size of his yards, he is not obliged to take any manure out of them until the autumn; and to prevent too rapid a decomposition, when carted into the field, it is closely pressed down in very large heaps, and protected from the air by a covering of earth. We might be inclined to doubt the advantage of keeping so large a stock of manure, for such a length of time; but we cannot forget the unusual weight and fertility of the crops now upon the land.

"This farm is conducted in a most admirable manner; and though others may, in some particulars, even surpass it in excellence, yet here we find such a combination of neatness and utility in management, as, in our judgment, fully entitles Mr. Johnson to the prize.

"Godfrey Wentworth, Esq. has occupied his Woolley park farm about fourteen years. The four-course rotation of green crops, barley, seeds, and wheat is here adopted; a variation being occasionally effected by the introduction of beans or tares on portions of land that would otherwise have been sown with pasture-grasses or clover after the barley crop. The land is very suitable for this course; being a good working soil upon a sand-stone rock. The surface is undulating; and though on the whole, dry and considerably elevated, parts of almost every field required underdraining. This has been effected completely over fifty-three acres; and the springs, which were noxious, have been converted into most valvable rivulets for supplying water to the live stock. The average depth of the drains is from eighteen to twenty inches; the distance six yards; the cost £5 11s. 6d. per acre, including the price of tiles, which are made upon the estate. The whole of this drainage has been completed between the 24th of March, 1838, and April, 1843; and the farm is now entirely dry. The fences which (as we were informed by Mr. William Heslop, the very intelligent steward) had been old, crooked, and full of gaps, generally on banks, and occupying considerable space, are now fences of peculiar beauty and promise; they are all quickwood, low, close, sufficiently broad at the bottom, and progressively tapering to the tod,—an admirable specimen: no stock can escape,—no land is wasted,—no room left for the growth of weeds. Prior to the planting of the quickwood, the ground was fallowed, manured, and trenched; afterwards, it was kept carefully clean.

"Turnips and Fallow Crops.—The preparation for these commences as soon as the corn is carried, by ploughing and harrowing the stubbles as much and as often as the weather permits,—making the last ploughing deep, to give the greatest exposure of the soil during the winter. The manure is led from the farm-yard in December and February; placed in a convenient and level site on a layer of earth, and protected from the air by a light covering of the same. For these crops, the manure is conveyed by one-horse carts, up the centre of each third drill, as soon as the drills are formed, and care is taken to spread it equally and quickly, that it may be covered in with the least exposure to wind and sun. The drills for potatoes, are thirty inches apart;—for mangel-wurzel, twenty-seven inches;—carrots and swede turnips, twenty-five inches. We found all these crops extremely promising, and remarkably clean. They had been sown about the 8th of May: six pounds of mangel wurzel, four pounds of White Belgium carrot seed, and three pounds of swedes were sown per acre; fifteen carts of manure per acre, were allowed for these crops. One-half of the swedes are carted to the farm-yard for the cattle by removing six rows alternately; but to supply the drain thus made upon the land, a quarter of a pound of linseed cake, per head, is daily given to the sheep when consuming the remainder. For the white turnips, which are all consumed upon the land, only ten cart-loads of manure are allowed.

"Barley.—Eleven and a half pecks drilled upon the acre, distance six inches, the chevalier variety chiefly used.

"White Clover.—Eighteen pounds per acre were formerly sown, broad cast, but now, fourteen pounds with half a peck of Italian rye-grass are put in immediately after sowing the barley, by a drill of twenty coulters, six inches apart, made by Nicholson. This was the first season of using the drill, and it was much approved, especially when seeds are sown upon a wheat crop.

"Wheat.—Eleven and a half pecks per acre, are drilled upon the land when ploughed after seeds. No manure is applied to this crop,—the seeds having been manured in the spring.

"Tares.—These are cultivated for soiling. Three bushels of winter tares, and two pecks of winter oats, are sown per acre for the principal crop; but for early cutting, rye, instead of oats, is mixed with the tare seed. The draught horses have only this during the day, and go to grass at night. We are of opinion, that it would be economical to soil to a greater extent.

"Grass-Land.—The management of this department is admirable. The average stock of Leicester sheep is 550; of Short-horned cattle, 40, all of a very superior breed, and in high condition. There being 76 acres of good permanent grass-land upon this farm, the heaviest cattle are pastured upon it, with a smaller proportion of sheap. The younger stock are principally maintained, with the ewes and lambs, upon the seeds. Much pains is taken to make compost on a large scale, which is applied to the grass-land in the autumn, winter, and spring. Thistles and other weeds are carefully kept down.

"Implements.—These are good; amongst them are a Double-Row Turnip Drill, with separate coulters for tillage and seed, by Hepponstall, of Doncaster: a large Corn-Drill by Smith, of Peasonhall, Suffolk: a Twenty-Coultered Clover and Grass-Seed Drill, by Nicholson, of Lincoln: a very efficient Hay-Making Machine, &c.

"The farm-yard is amply supplied with water, by a stream sufficient to work all the requisite machinery; the corn is thrashed, and the straw cut by water power. Nine farm horses are kept; but the relief they have from the water-wheel, is, perhaps, not greater than their extra work of conveying coals, &c., to the mansion, and to the drain tile-yard of the proprietor. A large tank has been recently formed, to collect the liquid manure, which has hitherto been carted only over the grass-land. Sensible of the increased value of farm-yard manure, by the consumption of linseed cake in it, Mr. Wentworth, in addition to that which was previously mentioned as being given to sheep when on turnips, allows to cattle, in the straw-yard, an average of three pounds per head daily; to the milk-cows five pounds; and to the stall-fattening cattle six pounds.

"We have never witnessed, neatness and good order carried to the degree which this farm exhibits: it is a perfect model farm; and as such, highly creditable to the proprietor; but there were other lands, brought under our notice, bearing crops considerably heavier."

(To be continued.)

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MANAGEMENT OF MANURE IN FARM-YARDS.—Mr. Harrison, of Devizes, recommends that, instead of allowing the manure to remain on the surface of the yards, it would be better to form it into ricks round the tank, so that it may be supplied with the liquor during the time of making. He recommends that all weeds, cuttings, and parings from roads, deposits in ditches, rubbish from gardens, &c. &c., should be carried home, and be deposited in these manure-ricks, according to the following directions, viz., "A layer of stable-dung, 1 foot thick, salted; a layer of vegetable matter, 6 inches thick, limed; a layer of stable-dung, 1 foot thick, salted; a layer of vegetable matter, 6 inches thick, limed; a layer of stable-dung, 1 foot thick, on the top of this fifth laying; saturate with the liquid from the tank in sufficient quantity to pass through the whole. Begin again, and repeat the layers as before with the dressings, and make the ricks to any size, the larger the better; then cover them up close with long dung or straw (earth would be better) to keep in the ammonia and prevent the rains from penetrating." Mr. Harrison justly remarks, that "A *clean farm* is not to be obtained without attending to the use of manure properly decomposed, and also to that of *liquid* manure, as these take no filth to the land." He states, in conclusion, "*Complicated recommendations* for a general plan to be adopted in the manufacturing of farm-yard manure would, I am convinced, from the experience I have had with Agriculturists, have ne general effect." And he says "from experience" what we were at first inclined to doubt, that the plan he has suggested is very plain and simple, so as to be in the power of any one to adopt; and that those who may feel inclined to try it will find their manure doubled by it in value.

Reviews, &c.

The Veterinarian, February. Longman and Co., London.

In the number for this month, in addition to Mr. Percivall's lecture on horses, and a continuation of Mr. Karkeek's "*Ancient History of the Ox,*" commenced in the last volume, and several other interesting papers, we have an account of "a peculiar affection in the horse, characterised by the coagulation and transformation of the blood into fibrinous clots," of which we give the following condensation:—

Symptoms on the 5th April:—

"General loss of spirit—the head carried low and resting upon the manger—the eyes almost closed, and weeping, the conjunctiva of a yellowish white, with the capillary vessels well marked—the pituitary membrane of a paler colour, and covered with small reddish points—the mouth hot and clammy, without any redness of the tongue—the food taken with indifference, and very slowly masticated—*slight constipation*—the pulse small and quick—a peculiar expression of the countenance, with a slow and staggering gait.

"*Treatment.*—We abstracted four pounds of blood, from the jugular. There was nothing amiss in the jet or character of the blood as it flowed. We administered a strong aloetic drink, in order to produce some general disturbance of the system.

"*Physical Characters of the Blood.*—The blood, as it coagulated, exhibited such peculiar characters and changes that we will record them, day by day, unto the close of the disease.

"Being received into the proper vessel, it coagulated in nine minutes. The black clot was three times larger than the white. Twenty-four hours after it had been drawn from the vein, the quantity of serum was about half as great as we generally observe it to be. It very nearly equalled the size of the white clot. The red clot—*le caillot cruorique*—which offered a certain degree of resistance an hour after its coagulation, was insensibly changed into a black, broken-down mass, without any peculiar smell, four-and-twenty hours after it had been in the vase. The white clot had preserved its natural consistence: it was only somewhat whiter, and more elastic. The line of demarcation between the white clot and the *cruorique* one was well marked; but on the surface of the cruor, and the superior part of it, and to the extent of a quarter of an inch, it presented a deep green-grass colour, which insensibly mingled with the brown tint of the clot.

"Independent of the diminution in quantity of the serous part of the blood, that, too, had acquired a greenish yellow tinge, and a viscidity like the synovial fluid. It separated itself more slowly than in its natural state from the other constituent parts of the blood. After twelve hours only, it had gained upon the superior part of the white clot so much as to form a layer two lines in thickness in about twenty-four hours. At this period it was covered by a thin pellicle, easily to be taken off with a little precaution, slightly yellow on its superior surface, and covered inferiorly by a greasy matter of a green colour, which, in our opinion, might give to the serum the oleaginous appearance of which we have spoken. Beside this, as if it had been endowed with some corrosive property, it had indented the superficies of the white clot with small apertures, irregular in their form and their depth.

"*6th.* The patient was in a state of depression, even more marked than on the preceding evening. The conjunctiva was of a deeper red, and the pituitary membrane presented the same colour, with petechial spots on its surface.

"*Treatment.*—Again we bled to the extent of four pounds, and administered emollient injections; friction was also frequently applied. The purgative had not acted, although twenty-four hours had passed since the administration of it. The blood presented the same characters, except that the serum was somewhat less in quantity. Its colour was deeper, and its viscidity was greater.

"*7th*, *8th*, *9th* and *10th*. The prostration of strength increases—the animal is almost insensible to the objects by which she is surrounded. She resembled a horse violently attacked by vertigo or epilepsy. The pulse and the beatings of the heart have not varied from the beginning. The quantity of serum has diminished, but the viscidity has increased. The solid parts of the blood offer no change.

"On the 11th of April, at half-past 11 o'clock at night, she died."

For the *post-mortem* examination we must refer our readers to the work itself.

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The Implements of Agriculture, by J. A. Ransome. London: J. Ridgway. (*Second notice.*)

In our former observations on this work we left our readers with a partial notice of the *English Swing Plough*, before going further into the author's account of the various other ploughs, we will finish what we have already began:—

"*The Coulter.*—Simple as the coulter may appear to be, it is a very important part of the plough, and much depends upon its being properly formed and fixed for the work it has to perform in the operation of ploughing. It should be made of iron and steel, and of sufficient substance to stand firmly to the position in which it is set for its work, not to bend either to the right hand or to the left. The blade or cutting part should be about two inches and a half wide, and formed by the meeting of two curves, as this shape cuts the land easier than when the edge is either in a straight line or curved forward. The land side of the coulter should be flat, and the opposite side a gradual taper from the edge to the back: the thickness must be determined by the strength of the work it has to perform.

"The angle at which the coulter is usually set, is about fifty five degrees with the plane of of the ground; but in 'summer-lands' it requires to be placed in a more slanting position, and to take the lead of the share about three quarters of an inch, to prevent the grass or rubbish driving in a heap, as it otherwise might do. *On the contrary*, when used for ploughing up hard fallows it requires to be fixed in a more upright position, and rather more backward than the point of the share. It should be placed about half an inch above the share, and a quarter of an inch to the land side of it. Every good ploughman has his own notions on the subject of setting the coulter, but the above directions are given from practical observation.

"The usual mode of fixing the coulter in the socket of the frame or beam, is by means of wood or iron wedges driven above or below the socket, or by a course cut screw-bolt, which turns into the side of the socket and presses against the coulter stalk. Each of these modes is defective. The plan of wedging the coulter is difficult, and the ploughman after trying his skill for some time, frequently finds himself foiled in his attempt to set it in its proper position. The plan of the screw-bolt just described is also faulty, for wedges are even then requisite, and the difficulty of setting is very little, if any, less than by the other mode."

"*Skim Coulter.*—This is in principle a miniature plough in the usual position of the coulter, for the purpose of cutting the surface grass and rubbish and laying it in a position to be completely buried by the furrow slice, which is turned over by the plough. This addition is not in very general use, but it produces very neat work.

"*Wheel Coulters* are used in the fenlands, and are useful when ploughing up turf. The cutting disc should be made of steel, with a nave sufficiently long for it to be steady, and the box should be bored true, and revolve on a well fitted steel pin, as on the perfect fitting of the box and axle the correct working of the disc, and consequently the effective operation of the plough, depends."

Mr. R. then proceeds to enumerate the advantages attributed to the Swing plough:

"1. It admits of being set into its work at a given depth, either shallower or deeper, by the mere alteration of the draught iron at the point of draught, or by increasing or decreasing the distance at which the power of the horses is applied.

"2. The ploughman has also the power of regulating, in some degree, the depth of the work, by either lifting or bearing upon the handles.

"3. Its construction is more simple than that of the wheel plough, and less expensive in its first cost.

"4. A skilful workman can plough across the ridge and furrow at very nearly an uniform depth; he can work with it on almost all descriptions of land, and in all weathers when ploughing can be accomplished."

After this our author goes into the consideration of the *Wheel Plough*, of which he observes:—

> "It would appear that the point of draught in this plough should be the same as in that of the swing plough, but a slight deviation from this is adopted in practice, from the unevenness of land rendering it desirable to bring a slight pressure upon the wheels, in order to insure an uniform depth of furrow, and this is effected by making the point of draught slightly above the part it would cut on the direct line; it will then be obvious that any remarks which apply to the one plough, such as pitching the share more or less into the ground, varying the breadth of the furrow by expanding or contracting the width at which the mould-board works, or similar alterations, will apply equally to the other. The difference, therefore, in the construction of the wheel plough and the swing plough lies in the addition of the carriage and wheels, and those parts which are in direct connection with them."

Summing up its advantages thus:—

> "1. That ploughing can be more easily performed by this than by the swing plough.
>
> "2. That the work can be executed with greater precision, both as to depth and width, inasmuch as the wheels serve as gauges.
>
> "3. That shallower ploughing can be effected with the wheel than with the swing plough, and that when the ground is very hard or very stony, it can be worked with more ease, and under some circumstances, in which the swing plough, cannot be held in its work at all."

And observing—

> "The advocates of the swing or the wheel plough, each advance good reasons for the use at particular times, or on particular soils, of the one or the other; but my object is to furnish a clear description of both, and to point out the mechanical principles, by which their respective merits may be compared."

He seems to consider the swing plough to require more *skill* than *judgment* in the ploughman, whilst the wheel plough demands a greater share of *judgment* than *skill*.

We are glad to find an impression which we have long had, viz., that a double furrow plough might with three horses and one man, on many soils, do the work of four horses and two men, borne out by the following:—

> "A farmer residing in the neighbourhood of Ipswich, has three double furrow ploughs at work, and the account he gives of them is—
>
> "'That with three horses abreast, and one man only, he can plough double the quantity of land per day than he can with a single pair horse plough; in other words, he ploughs, with his double furrow plough, two acres instead of one: thus he saves a man and a horse. He admits it may be rather more work to the horses, but not worth mentioning. He ploughed thirty acres in fifteen successive working days and the horses did the work without being in the least hurt by it. The ploughmen sid not at first like these ploughs, but they soon became reconciled to them. The land in which they were used is light, but inclining to what is termed a mixed soil or sandy loam. The furrrows are nine inches wide by six deep.'"

Mr. Ransome notices the subsoil plough of Mr. Smith, of Deanston, and that of Sir Edward Stracey, called the Rackheath subsoil plough; he also mentions that draining ploughs have been constructed, but he says so little of them, that it is discouraging, and we fear many will be tempted to doubt their utility. We, however, hear of great things performed by their means—that the cost of cutting the drains is reduced very materially, and that the work is performed most expeditiously—in some seasons a matter of great moment—and that the level is well regulated, a point often attended with much difficulty. On this subject we think our author, with his high standing as an Agricultural Machinist, should have been more explicit.

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Quarterly Journal of Agriculture, and Transactions of the Highland and Agricultural Society of Scotland. New series, No. 3. Blackwood and Sons, Edinburgh and London.

The steeping of seeds for the purpose of assisting germination, and promoting their subsequent growth, is the *Alpha* and *Omega* of the present number. Professor Johnston has notices of two German writers on "*The discovery of cultivating soil without the aid of Manure*," viz., Franz Heinrich Bickes, of Mayence, and a certain Mr. Victor, an apothecary at Neiderholm; and the learned Professor deals with them as it is reasonable to expect he should, without altogether denying that by steeping seeds their growth may not positively be promoted in a sensible degree. Mr. Johnston, in which we fully concur, seems to doubt that—

> "The prepared wheat had from ten to fifteen stalks from each grain of seed, and the ears and grain were larger. The rye had nearly one-half more, and larger grains in the row. The two-rowed barley had from eight to fifteen stalks from a single seed; generally the produce was greater than on the best fields of their farms. The prepared flax was one-half heavier in stems and seed capsules, and the latter were double in number; and when the unprepared had already become yellow, the prepared was still of the deepest green. But the potatoes excelled every thing yet known in the most productive fields. From a single potato there were seldom less than ten and sometimes seventeen strong stems, while, in the best fields, there are seldom more than one-third of this number." As three persons from Offenbach, who had their seeds prepared by Mr. Bickes, have, it is said, testified; or that—
>
> "Ten or twelve potatoe plants gave on an average thirty large potatoes each, and had stems seven feet in height.
>
> "Fifteen stalks of Indian corn had on an average five heads each, some having as many as eight or nine heads to a single plant."

The next experiments quoted by the author were made at Amsterdam in 1834:—

> "The buckwheat was four and a-half to five feet high, the flax had four to five stems from each seed, the Indian corn was nine to ten feet in height, and had four to five heads from each seed. The white clover was as large in the leaves and stems as the red clover usually is; the red clover and Lucerne three feet high.
>
> "These results were obtained from the prepared seeds alone, without manure, on a depth of six or eight inches of the drift sands of the downs, arranged in beds for the purpose of the experiments." As certified by seventeen *burgomasters, town-councillors,* (much they may be calculated to know of the matter,) gardeners, *schoolmasters,* farmers, and land-valuers.

Nothing is more true than the legal adage that "you may ruin your cause by proving too much;" and this seems to be the "fix" in which the German *steepmeisters* (we will coin and word in their honor) have placed themselves. That certain saline preparations may assist very materially the germination of seeds we have no doubt; and that a very much smaller quantity of any known fertilizer than usual may be applied to a soil with increased effect, where it can be brought into immediate contact with the seed, we believe; but that the seed shall itself imbibe as much of any soluble fertilizer as will, upon an impoverished soil, bring a crop to maturity, we must be excused at present assenting to, albeit the Highland Society in the "*Transactions*" before us allows Mr. Campbell, whose advertisement of his "*Corn-growing liquids*" have been some months before the public, to assert:—

> "That the greater number of the stems of the oats are as thick as small canes, and the leaves from one inch to one and one-seventh inch in breadth, of a vigorous dark-green colour—that the seed was very light, not exceeding 37℔. per bushel, and consisted of grains set aside for feeding poultry—that the average number of stems from thirty-three seeds is eleven and a-half or twelve to each seed sown, and the gross apparent produce between five and six hundred-fold, both of oats and bear."

Professor Johnston, as we before observed, inclines "to doubt, or, perhaps, entirely disbelieve, that the quantity of manure with which he (Mr. Vietor) envelopes his seeds can be sufficient to supply the wants of a crop;" yet, he states the following "facts," from which he is led to believe that—

> "Considerable benefit may in reality hereafter accrue to practical agriculture from a careful study of the effect of certain known steeps or prepared mixtures upon the after growth of the seeds upon which they have been tried.
>
> "1°. The quantity of inorganic matter contained in the grain of wheat, oats, barley, &c., is comparatively small. In wheat and barley it varies from 1½ to 2 per cent. of the whole weight; in oats it is about 3½ per cent., but a considerable proportion of this is contained in the husk with which the oat is usually invested. But, though small in quantity, this inorganic matter is absolutely essential to the perfect condition of the seed, and to the healthy growth of the plant that springs from it.
>
> "2°. When seeds are steeped in water, they swell and increase in bulk. They absorb a

portion of the water and of any saline substances it may hold in solution. Now, if the small quantity of saline or inorganic matter which exists in seeds does really promote their growth, may not a larger quantity promote it more? May not the growth be more luxuriant if the seed be steeped in water containing saline substances in solution, and be thus made to absorb an additional proportion? It does not appear unreasonable to suppose that a bushel and a-half of seed-wheat may be made to absord a pound of saline matter. This appears, indeed, to be only a very small quantity, and yet, if absorbed, it would add one-half more to that which the seed naturally contains. We cannot pronounce beforehand, with absolute certainty, that by this absorption the growth of the seed would be greatly promoted, though both theory and practice concur in rendering it probable. Thus the experiments of Bickes—whose mode of preparing seeds appears to be a simple steeping in saline solutions—appear decisive in favour of the opinion that such artificial additions to the saline matter of the seed do really, in some cases at least, greatly promote the growth of the seeds, and increase the luxuriance and produce of the after crops.

"The fact that saline manures are beneficial, in many cases, to the growing crop, when merely applied to the soil, is in favour of the same view. The salts, it is true, when applied to the soil, enter the plant by its roots; but, nevertheless, their action is simply to yield saline matter to the plant in larger quantity than it could otherwise readily obtain it from the soil. This additional supply might at once be given it, to a certain extent, by steeping the seed itself.

"3°. Further, we know that some seeds germinate much more readily and certainly than others. We know, also, that the proportion of inorganic matter, or of ash they leave when burned, varies in different samples of seeds of the same kind. That contained by wheat, for example, is sometimes 1½, sometimes 1¾, and sometimes nearly 2 qer cent. of its weight. Can this difference in the growth of seed and the difference in the proportion of saline matter have any connection with each other? Do some germinate feebly, do others fail entirely, because they contain too small a proportion of the usual saline constituents of the seed? Would they germinate better if more were by some means given to the seed? The same experiments of Bickes, upon the effect of steeping, seem almost to answer these questions in the affirmative; they, at least, render it very probable that some such relation does exist between the two differences to which I have alluded. The same may also be said of the observation made by *Mr.* Fleming of Barochan, that seed wheat, which had been dressed the previous year, with certain saline substances, grew more luxuriantly, and gave a better crop than that which, though grown on the same field, had not been so top-dressed. It is not very unreasonable to suppose that this better growth of the dressed seed might be owing to its having obtained, from the substances applied to the soil, a larger proportion of saline matter than that to which no top-dressing had been applied.

"Still these circumstances only render probable the opinion to which I have adverted. They point out however, new series of researches, both in the field and in the laboratory, by which the opinion will be tested, and either refuted or confirmed. In the field, experiments must be made with different seeds, dressed and undressed. In the laboratory these seeds must be examined, the proportion of inorganic matter they respectively contain determined, and if this inorganic matter be equally in quantity in seeds exhibiting different powers of germination and growth, the difference in the kind or quality, as well as in the quantity of the ash, must be more or less rigorously ascertained. By these united methods of investigation, we may hope, by and by, to make out what are likely to be the real and constant effects of steeping upon seeds—to what kind of seeds or roots it may be applied most beneficially, under what circumstances this treatment ought to be especially adopted—what kind of saline substances ought to be applied to each species of seed, and in what proportions—and what is the nature of the influence they may be found to exercise in promoting or otherwise modifying the growth of the after crop."

We have given rather more space to this matter than we can well spare, but its novelty must be our excuse. If there be truth in the suggestions of either the Scotchman or the Germans, it is a point of grave importance to the agriculturist to ascertain to what extent: and as Professor Johnston promises a recurrence to the subject, and as experiments will, no doubt, be tried during the next season, we may hope before the end of the year to be able to lay before our readers something more tangible than we have at present.

Mr. Cuthbert Johnson has a paper on *Spade Husbandry*, in the course of which he gives an account of Mr. Mitchell's cultivation of a farm of 317 acres by the spade and fork, (from which we learn that for mangold wurtzel and potatoes, after a single ploughing, the digging or forking is performed at the rate of 1¾d. to 2d. per rod.) and of the celebrated Case of Samuel Bridge, of Stock Green in Worcestershire.

Amongst the papers and Prize Essays of the Highland Society, we have a "*Report on the Improvement of Waste Land on the Farm of Nether Savock*," by Mr. Roderick Gray, Peterhead, which is too important to be dealt with by extract, we shall therefore present it entire :—

"The farm consists of 211 acres, three roods, and eleven poles arable ; 178 acres and three roods heath and bog ; 97 acres and 3 roods deep moss ; and 3 acres, 2 roods, and 25 poles roads. This extent was increased by some small additions in the straighting of marches, and it now (October, 1843) amounts to 500 acres and 12 poles ; whereof there are 336 acres, 2 roods, and 12 poles arable ; 29 acres 2 roods and 22 poles heath and bog ; 99 acres, 1 rood, and 26 poles deep moss ; and 4 acres, 1 rood, and 32 falls roads, &c.

"*Roads.*—The first operation was to form and make roads, as without these the land was an inaccessible waste, totally worthless for agricultural purposes, and for any other purpose not worth above sixpence of rent per acre. The sum laid out upon the roads was £101 : 6 : 7.

"*Ditches.*—After roads had been made, the next step was to make large ditches, varying from twelve feet wide by six deep, to eight feet by four. These ditches extend to 14,607 yards, and cost in all £250 : 8 : 9. Connecting with these, ditches of smaller size were required, as well as sunk drains built of stone, and having an opening to allow the water more freely to escape.

"*Ploughing.*—After the land had become sufficiently firm to admit of cattle treading upon it, the reporter began to trench-plough it with oxen ; endeavouring, as far as possible, in the course of his operations, to break the muirband-pan, and take up a portion of the subsoil. This was done in the summer and autumn—the boggy parts in the summer, and the hard and dry parts after the rains in autumn—as it would have been impracticable to penetrate the muirband pan when the land was dry. The reporter, to a small extent, found it advantageous to dig the boggy parts with the spade, where the soil had not become sufficiently consolidated to admit of being ploughed.

"After being trench-ploughed, the land was allowed to remain in a rough state, exposed to the pulverizing effects of the frost and rains of winter, and next spring or summer the furrows were broken by the grubber, and the land again trench-ploughed across, and either reduced again by the grubber and fallowed, or, where found necessary, exposed to the effects of another winter, and fallowed the summer thereafter.

"When the ground had been sufficiently pulverized and exposed to the action of the atmosphere, and the moorish soil mixed with a part of the subsoil, it was then dunged and limed, and a crop of turnips or oats sown.

"The land will now be kept in a rotation of five or seven coarse shift ; one part of the farm is under a seven-course and another under a five-course shift.

"The reporter, in all cases where practicable, in cultivating waste land, would, according to his experience, prefer ploughing to trenching with the spade and mattock, for the following reasons :—1st, Ploughing is a cheaper method than trenching ; 2d, Trenching does not supersede deep ploughing and fallowing, for it is necessary to trench-plough to the depth of the trench made by the spade, in order that the soil may be pulverized, mixed, and exposed to the action of the atmosphere ; 3d, If there are stones in sight, they are easier quarried and removed before the surface is broken than when they are placed on the surface of trenched land ; and 4th, There is not much land, at any considerable distance from the town, that will bear the expense of trenching by the spade ; and, 5th, It had been found that land, which had been supposed to bid defiance to the plough, has been brought into cultivation by the plough alone, after taking the proper preliminary steps of drainage and removing the stones before beginning to plough, and not attempting to plough while the land is hardened by drought.

"The comparative expense of trenching by the spade and ploughing, in ordinary cases of moorland, such as now reported upon, may be estimated as follows :—

Trenching, per acre, ...	£6	8	0
Ploughing twice, harrowing, and grubbing	2	8	0

"The ploughing, preparatory to sowing the land, would be rather more after trenching than after it had been twice ploughed, harrowed, and grubbed.

"The whole of the land brought into cultivation was limed at the rate of seventy-two bushels of lime-shells per acre, and manured with a mixture of court-yard dung, compost o earth and moss, herring refuse and sea-weed and, in addition to these, over a considerable extent, twelve bushels of bone dust per acre.

"The average expense of bringing the land into cultivation, including roads, ditches, drains manure, and seed, per imperial acre, amounts to £10 17 7½

"And the average returns of the first crop of oats, as nearly as the reporter has been able to make them up, not having kept a separate account for each field, are two and a-half quarters per acre, which he estimates, including fodder, at 22s. 6d. per quarter 2 16 3

"One field in turnip, crop 1842, he estimated as being worth £3 : 10s. per acre, and the crop of oats this year he estimates at three and two-eighths quarters per acre.

"Another field was in oats, crop 1841; and as he could not, in consequence of the state of the other parts of the farm, prepare it for turnips in 1842, it was sown with grass-seeds with the first crop; and this grass, in 1842, was worth 10s. per acre, and this year about 7s. 6d.

"A third field was sown out with the first crop in 1842, for the reason before mentioned, and has been in pasture this year, and estimated worth 15s. per acre.

"The reporter having, as a tenant, brought into cultivation upwards of 450 acres of waste land, he is of opinion that under liberal encouragement, the extent of tillage in Scotland may be greatly increased, perhaps doubled, the labouring classes much benefitted, and the resources of the country considerably augmented.

"The reporter has observed, in many lacalities, that waste land, in the composition of its soil, is nowise inferior to what is already in cultivation—in some cases it is superior. Of course it wants vegetable mould, but this may be supplied in some measure from the herbage on the surface, whatever it may be. The swampy and boggy lands, after the hollows are dry, are in general superior to the higher lands, being composed of soil washed by the rains from the higher grounds, and covered with moss and the coarser grasses. But, on the sides of hills or rising grounds, there is often a great depth of clay mould which requires only to be broken, exposed to the action of the atmosphere, and to have lime and compost added to it, to produce crops.

"Were roads made through large tracts of moorland, and were the land drained and divided into moderate sized allotments, of from ten to twenty acres each, and were an allowance of from £20 to £30 to be given for erecting houses, (and suitable houses could be erected for either of these sums, according to circumstances,) there would be no difficulty in letting such allotments to industrious and active tenants who, at the commencement, would pay interest on the sums advanced for roads, drainage, and houses, and which should be the only rent charged for the first ten or *fifteen years, according* to the quality of the land; and for the remainder of a twenty-one years' lease, they would be able to pay 5s. to 6s. per imperial acre. In most cases, at the end of such a lease, the land would be worth 8s. to 10s per imperial acre.

"Where waste land adjoins farms, it should be let to the tenants of the farms for improvement upon the same terms as to crofters. In many cases it might be advantageous to the landlord not to charge any rent during the currency of a ninteen or a twenty-one years' lease, inasmuch as he would get additional rent at its termination, for what otherways would be of little value, and he would thus afford employment to labourers, improve the climate, and add to the value and beauty of his estate."

◆

Brief Remarks on some subjects connected with the choice of Wheat for Seed; interesting to farmers, corn-factors, and bakers. By Sir G. S. Mackenzie, Bart., F.R.SS. L. & E., &c. Maclachlan, Stewart, and Co., Edinburgh: Simpkin and Marshall, London.

The worthy Baronet has, in the few pages before us, put farmers on their guard against too much deference to the judgment of millers, corn-factors, &c., on the value of their wheats; for he is of opinion that the means usually taken by "the trade" to determine the comparative value of samples are not those which lead to just conclusions: moreover, he thinks that bakers, in preferring a mixed flour, or a flour prepared from mixed wheats, part of which are usually foreign varieties, are guided, not as is too frequently considered, by a desire to increase their quantity at a cheap rate, but "from the want of means to discover whether a *single* variety possesses the desired qualities;" these qualities being, as is very well known, an aptitude to absorb water.

"They try," observes Sir G. S. Mackenzie, "one, two, or several, and find none of them, singly, suitable for their purpose. On mixing them, they procure, as they conceive, an average quality of flour which they find more certainly to bake well. Hence they do not like to run risk with a single variety; and foreign wheat, being in all cases a mixture they give it a preference. It is, after all, but a chance; the chance however, of obtaining a good flour is greater from a mixture than from a single variety."

And proves his conclusions, that bakers love mixtures, by the following anecdote.—

> "Mr. Oliver, of Lochend, told me the following amusing anecdote:—He took the produce of two different fields, two different varieties, to the market. He offered to a baker, first one, and then the other, and for each an offer was made. He then presented a handful of the two mixed together, when he was immediately offered as much as two or three shillings a quarter more for the mixture, than for either of the sorts singly."

Whatever may be the baker's motive in using mixed wheats, there is no doubt of this, that we shall with great difficulty, in this country, in the average run of seasons, provide a substitute altogether for foreign grain; for though very excellent bread is produced from English wheat, yet the dry samples of foreign, mixed though they be, are most generally preferred by the trade, not, in our opinion, because they are at a loss to discover any single variety which possesses the qualities they look for, but because the foreign samples are, for the most part, drier than our own, and can occasionally be had cheaper.

The writer seems to have taken laudable pains to come at solutions to the following queries:—

> "1. Whether, under the same circumstances in reference to soil and climate, different varieties of wheat were, chemically, differently constituted.
>
> "2. Whether external appearance, and the weight of a given bulk, were sufficient to indicate the *actual* value of wheat, to the baker, and starch-maker; consequently,
>
> "3. Whether the aid of chemistry was necessary for the purpose of fixing the market value of wheat."

Although in the "*Remarks*" we do not find that he has succeeded.

He gives the great associations of both England and Scotland some hard raps for their mismanagement in spending large sums "in the erection of dinner pavilions," when experimental farms might be established at almost the same cost. In this we very much agree: if the Royal Agricultural Society of England, for example, at its annual country meetings, abolished the great and useless dinners, appropriating the cost of them to the arrangement of an example-farm at or near the place of meeting, its advent would be marked by an establishment worthy of it, and it would leave behind it a rallying point for the district, whence improvements of all kinds would emanate, and where its motto, "Science with practice," would be practically illustrated every day of the week, doing more for the agriculture of the neighbourhood than can be readily imagined, and creating a competitive desire amongst the principal towns of the kingdom to have its meetings greater than has ever been hitherto exhibited by them, great as that desire no doubt is.

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Journal of the Royal Agricultural Society of England. Vol. IV, Part 2. London: J. Murray.

THIS number of the Journal of the Royal Society opens with a paper by Ph. Pusey, Esq. M.P., *On the Agricultural Improvements of Lincolnshire.* There are few contributors to our agricultural literature whose style of writing is at once so perspicuous and so pleasing as that of the honourable member for Berkshire. He invests with a charm, peculiarly his own, the driest details, and interests the reader in subjects which under the pens of other writers, would afford no inducement, and be too often passed by as unworthy the labour of a perusal.

Our readers generally, will not perhaps be aware, from the present state of its agriculture, that formerly the county of Lincoln was one of the least cultivated counties in England—that vast heaths, and still more extensive fens monopolized the greater part of its acreable extent—and that on one of the former, viz., Lincoln Heath, a light-house was literally erected to beacon wayfarers over its extensive wastes, and guide them on their way; and that such beacon, called Dunston pillar, still exists, though no longer lighted; for in its stead are now to be found numerous light-houses in the shape of excellent homesteads, and around its base fields in an exemplary state of cultivation.

An interesting account of the past condition of the county occupies our author at the commencement of his paper. He quotes Lord Yarborough's estate as an example of what may be done by good management upon some soils in the following words:—

> "I must say that when Mr. Handley pointed out to me this estate in 1842, then entirely unknown, its fine farm-buildings, on which £150,000 have been expended, surrounded by lofty ricks, its 30,000 acres of good turnip-land, divided by clipped hedges of thorn, where Mr. Young saw miles of gorse, and of course thousands of rabbits, I thought I had made the discovery of a domain equal in the spirit, magnitude and rapidity of its improvement to the well-known estate of Holkham; and, having seen it again last October—though, in consequence I suppose of the weather, the turnips did not look so well as before--I think so still. Mr. Young was informed by Lord Yarborough that his wold-land then let for 5s. an acre. I may state that tithe-free, it is now worth five times that amount: and great as is the change on the Brocklesby estate, it is not greater than the general change of these chalk-hills. The first step was of course grubbing the furze, paring and burning the rough peaty grass; the latter costing a guinea per acre. Then there was brought a heavy dressing of chalk, 80 cubic yards to the acre, costing at the time 66s.; last followed 60 bushels of bones, for bones were cheap in those days, and a bushel cost but 1s. 3d., making another item of nearly £4. I am told that the wolds have been chalked twice over; and that, without chalking, the turnips are destroyed by the excrescence called "fingers and toes:" but even the first outlay of the tenant amounted to more than £8 per acre—a great sum for the individual farmer, and a very large amount upon the acreage of the whole district."

A lamentable, and too frequent disinclination on the part of landowners to grant leases, breaks out in our author, in the following:—

> "And here, though I would by no means argue against the granting of leases, but think, on the contrary, that when a tenant is ready to sink his money upon a farm, he is entitled to that security, if he desire it, I must state in fairness that this large sum of £8 per acre, or £8000 on a farm of 1000 acres, has *been* expended on the farms at Brocklesby (according to the practice of Lincolnshire) only through well-merited confidence in the owner: and I must also mention, that whereas in East Lothian, where leases run in general for nineteen years, the lease and the tenancy are often ended together; here, on the other hand, the farm, though on a yearly tenure, passes, almost as a matter of course, from father to son; in one case, when a farmer dying left a son three years old only, two neighbouring tenants undertook, and were allowed by the landlord, to manage the farm for the infant, in trust until his majority. Nor has the spirited outlay on the part of the farmers been without its return. The parish of Limber, 4000 acres, was formerly let to four tenants, at £125 each, or 2s. 6d. an acre, and all four became bankrupts. It has been enclosed, is now well farmed, excepting what has been planted, and at the present rent the tenants are doing well. In some instances considerable fortunes even have been made."

This "confidence" is, we admit, often "well merited," but, alas, it is sometimes abused by a successor to the estate, or by a newly appointed agent; instances are within our knowledge of both: but, on the other hand, instances are also within our knowledge where tenants-at-will have remained upon an estate through several successive generations, and whilst the ownership has been exchanged by purchase three several times: these, however, are the exceptions; the rule is, that before such an outlay is made as is described in the following, a lease is a very necessary part of the security a tenant ought, in justice to himself, to require:—

> "I may cite the case of Mr. R. Dawson, well known in the county, who occupied the entire parish of Withcall, 2600 acres of ploughed ground, with one barn at the homestead. He was one of the first who ventured a heavy outlay upon his land: his yearly bill for bones alone was from £1500 to £1800. A friend, who staid at his house for three days about 1835, tells me that he thought Mr. Dawson's management the perfection of farming; and you might see a single field of 350 acres in turnips. He died a few years since, and left a large fortune. Such instances, of course, are uncommon; but I believe that what Arthur Young observes, in his 'Six Months' Tour,' is perfectly true,—namely, that large fortunes can only be made *in* farming by the spirited cultivation of land

which had been previously ill-farmed, or of absolute waste."

Mr. Pusey gives the following account of the rotation and mode of management of Mr. Frankish, of Temple Bruer, upon a farm of which—

> "The soil is a yellowish sand, about 6 inches deep only, and on a dry walling-stone rock. The extent of the farm is about 700 acres, of the same light shallow soil, all under the plough. The rotation is the common four-course one—turnips, barley, clover or grass seeds, and wheat.
>
> "The peculiarity is in the number of dressings, purchased and successively applied to these crops. The ordinary number of dressings varies in other districts where this four-course system prevails. Thus on one farm of my own, the land during the four years' rotation only received a little poor dung, or rather rotten straw, at wheat-sowing. The turnips, if any turnips grew, were fed off by breeding ewes, who sometimes obtained rough hay, and who in one season, as I found, obtaining only mouldy pease-straw, had lost one-half of their sucking lambs, which they could not sustain. Such starvation of land, and far worse of animals, is, one must hope, extraordinary also. A better treatment is to give dung to some of the turnips, and to buy woollen rags for part of the wheat. A further step would be to fatten off the young sheep when they are a year old, giving them corn with their turnips; and this could not be called bad farming, if the soil had any depth or natural strength; but the farm at Temple Bruer has neither depth nor natural strength—and I will state how these two defects are supplied by its tenant beginning with the turnip-crop as the foundation. This crop is sown with 16 bushels of bones, and it is fed off upon the land by sheep receiving oil-cake, which may be regarded as a dressing for the following barley crop. In the next year, after the barley is mown, follows a dressing which will surprise many farmers. The dung of the whole year, which I saw in a vast mass, cleared out of the yard in October, enriched with oil-cake that had been purchased for sixty beasts wintered there, is laid at Christmas upon the barley stubble, for the benefit of the artificial grasses which follow. Of these grasses or seeds, as they are called (among which two pounds of parsley are sown, a common Lincolnshire practice,) only one-third is made into hay and carried off, two-thirds are depastured and return again to the ground. Observing too that troughs were set out upon these seeds last October, I found on inquiry that they contained oil-cake for fatting ewes: *and that this is a growing practice*, the ewes receiving each a pound of cake daily.
> follows the wheat sowing; and not content
> having spread the whole of his oil-cake
> upon the seeds at the previous Christma
> with having fed off two-thirds of these
> upon it in the summer, and so restored to
> ground what it had brought forth, or even
> having given oil-cake to his ewes in Oct
> upon it, this practical farmer buys rape-
> which he throws on his land at the rate of 4
> to the acre, when he has ploughed the gr
> and pressed it for wheat-sowing. Thus in
> four years' course, the turnips obtain b
> purchased, the barley obtains oil-cake eate
> the sheep, purchased, the seeds obtain the
> made with oil-cake that has been purcha
> and the wheat obtains two-thirds of the
> fed on the land; oil-cake for the fatting
> purchased, and rape-cake at its own seed-
> also purchased. This repetition of dress
> is, I should think, quite unexampled. The
> sult is noble crops upon land for which a
> years since the rent was paid by two rab
> an acre."

Too much attention cannot be paid to
economising of power upon all farms.
Pusey condemns very properly the he
carts and waggons of Lincolnshire,
quotes the following result of an experim
made by two of his neighbours in Be
shire:—

> "Mr. Edmunds, who has lately introdu
> one-horse carts, and Mr. Brookes, who empl
> the light Berkshire waggon, agreed to com
> the quantity of wheat carried by them from
> fields of similar crop, along the same kind
> road, to their homesteads. The result app
> in the following table:—

		Driving lads.	Time. h.	m.	Distance in Furlgs.	Hor-ses.	Ac w
Mr. Brooks	3 wags.	2	4	50	5	7	
Mr. Edmunds	4 carts	3	5	0	$4\frac{2}{5}$	4	

> "The crop carried with waggons was a li
> thicker upon the land than the other, but no
> much so as to make much difference in
> trial. It was necessary also to try the o
> horse system in the other branch of farm-
> riage, the carting of dung. This was done
> Mr. Harris, of Hinton. One day he led
> dung with his own three-horse carts; the n
> day he led it to the same field with the one-ho
> carts of Mr. Edmunds. The strength emplo
> was as follows:—

	Carts.	Driving lads.	Hor
Three-horse carts	4	3	1
One-horse carts	5	4	5

the horses on the first day doubled : second in number, Mr. Harris y or quite as much dung on the ıs on the first. These two trials : in favour of one-horse carts, which in the North alone but in Bedford- ghbouring districts; and as a cart ıble harvest-rail may be bought for now no longer any doubt that, un- deep land, if a farmer will part with ms and heavy dung-carts, buying et of light one-horse carts in their l be quickly repaid by the large ving in horse-keep."

ad to find a prepossession which favour of the disc-engine, the first saw one, corroborated and d by the following account given burn of one of these engines set Jppleby's farm, at Wootton :—

-engine exceeds our expectation in :; it is easily managed without the of an educated engineer, and has ıired no repairs. At present we innow grain by steam, cut chaff, ess corn, flatten linseed or beans, ke. Bones we propose breaking, steaming of chaff. We have not number of horses, having under- wn 'marling,' or chalk leading, ıerally contracted for; but we are at four horses out of eighteen will e saved by the use of steam."

east interesting part of our au- ır is his enquiry, how far the farming so successful on light colnshire are applicable to other ınd into this enquiry he goes at ı. We must, however, refer our he Journal itself for this or any ount of "Lincolnshire farming."

II paper is a "*Report on Mr. Dibbling-Machine*"; from J. H. M.P., and the other referees; give at length :—

undersigned, have at your request ıe effect of Mr. Newberry's dibbling ıd have no hesitation in reporting rity of the wheat-crops where the en planted by that instrument over had been sown broadcast, or drilled. ny opportunities of comparing, side : produce of these several modes of and in every instance *found the* dibbled wheat to be much longer and stronger in the straw, finer in the head, and much more free from diminutive ears; it was also much less lodged; we attribute this to the pressure of the rim, or iron roller of the dibbler, giving the seed a firmer bed, sufficient grains being placed in each hole to guard against contingencies and supply the crop; but as vegetation advances, each plant having space to expand, and thus derive more nourishment from the soil and atmosphere than those which are placed more thickly in the drills.

We found that the machine deposits the seed very regularly, at the distance of six inches: both the quantity in each hole, and the distance between the rows, can be easily regulated by the person using the implement—one bushel and a peck per acre Mr. Newberry recommends, and we believe it to be amply sufficient. In corroboration of our opinion, we have received several letters from farmers who have tried this instrument, both on heavy and light soils, stating that they have saved one bushel per acre in the seed, with a prospect of a much larger advantage from the increased produce. We think also the dibbler is likely to become of general use in the planting of beans, as it will enable the farmer to clean them more perfectly.

In conclusion, we beg to state that Mr. Newberry is, in our opinion, entitled to the thanks of agriculturists for the exertions which he has made to bring this implement to perfection; and we hope that the patronage which he will receive may repay his labour and expense.

James Haughton Langston.
Thomas Baker, Little Rollright.
Thomas Carpenter, Hall Farm, Chipping Norton.
James Huckvale, Over Norton.
Henry Fowler, Kingham.

The paper No. XXIII is a Prize Essay "*On the Drainage of Land*," by THOMAS ARKELL.

This is really a practical exposition of the art of draining: an art requiring more skill than people are apt at first to imagine. Too many seem to think that to drain a farm all that is required is a certain amount of money expended in drain tiles, a few men with spades, and some cart-loads of brushwood or heath to lay over the tiles. It is true these are important requisites, but without skill in the matter to point out the depth, direction, and frequency of the drains, your land will be water-soaked notwithstanding, the spade-men, and the tiles, and your money is very apt to be thrown away. The author of the paper before us is a practical operator on wet lands, and is therefore well qualified to teach those who may be willing to learn not only "*how,*" but "*whether* drainage should be done." On this latter point our author observes :—

> Before going over the different heads, it will be necessary to know that land requires draining; though this is easily known, still it is not sufficiently known, or at least acted upon by a great number of owners and occupiers of land, and I would wish to make this essay capable of being understood by every one, even the labourer who has a wet garden. But first, a word on the term *surface-water*, which I think, has misled many. Land is said to be wet from surface-water when the wetness is caused by the rain that falls directly on it, and it is free from springs. This is true, but if the surface be wet, the subsoil is equally so, and becomes overcharged with water *first*, consequently requires draining on the same principles as springy land. When I have seen drains being put in about sixteen or eighteen inches deep, I have said, "Why don't you put them deeper?" and the answer has been, "We only want to catch the surface-water." But if the subsoil be dried, the top will certainly be so: now the water enters the drains at bottom, whether the land is wet from surface water or from springs; it does not run along the surface to the top of the drain and enter there, as many people appear to suppose.
>
> The means I take to find out whether land which I am doubtful about requires to be drained, is, when the springs are at their height, which is often in February, to go over the land about twenty-four hours after the rain has ceased, and make marks where drains are necessary, which will be where you find the land wet as you walk up the furrows; and if you are not quite satisfied, dig a hole about eighteen inches deep; if you find water, be satisfied it wants draining. Such trouble will be unnecessary on clay-soils and subsoils in a *flat* country; these you may be certain require it. If such soils have a considerable slope, it may be more questionable, but in general they will, although some argue that where land has a considerable fall, and the furrows and trenches are kept well open, draining is useless; but you may be sure that where water furrows and trenches are necessary, draining is required; but upon clay-*soils, with a porous* subsoil, it is quite necessary to take the above trouble if you want to no more than is really requisite.

Following the order in which several points required by the Council the Royal Society are placed we come fi to "The depth and frequency of drains," on which Mr. Arkell writes :—

> The one must be partly ruled by the oth if you cut the drains deep, they are not quired so frequent; if they are put near togeth they need not be so deep. This rule will h good to a certain extent on all descriptions soil, but from the great variety which exists the retentiveness and porousness of soils, y cannot reduce the depth and distance to o fixed rule. Land that lies in ridges (or lan as the term is here) is generally drained in t furrows, and though the ridges are of ve various widths, if they have a considerable slo up their sides, say from 1 in 10 to 1 in 20, t drains along the furrows will be sufficient keep the ground dry, if put in at a depth 24 or 30 inches, the latter being preferable; b on some retentive clay-soils, where the slo is 1 in 40 or less, and the lands more than or 14 yards wide, it will require them deeper, else more frequent. Land lying in ridges generally drained at the least expense; from i lying in a round form, part of the land is in measure drained, and by putting the drains the furrows, you keep a piece of land dry, pe haps 16 yards wide, whereas if the same de cription of soil where level, it might wa draining at 6 or 8 yards' distance. I ha heard of land lying in ridges being drained equal distances, paying no regard to the rid or furrow; but this plan must be wrong, ev if you go deep enough to drain it, from its cos ing a great deal more in cutting through t ridges. Now the chief point in laying out drai is to know how far your land will draw fro the drain.

Our space will not allow of further e tract at present; we will, however, resu this very interesting paper next month.

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NEW BOOKS—A practical Treatise on Bre ing by W. Black, 3rd edit. 8vo. Chronicles the Seasons, book I, 18mo. Production of Fo 18mo. Roper on the nature and manageme of the Horse, 12mo. The Tree Lifter or a n method of transplanting Forest Trees, by C G. Greenwood, 8vo. The Book of Har Flowers, by B. Maund, small 4to.

OUR TABLE.—We have several works befo us, which we cannot however notice in our pr sent number.—All new books intended for r view should be left with Mr. P. L. SIMMOND Agricultural Agency Office, Cornhill, on before the 1st of the month.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

MARCH—1844.

We earnestly request attention to a statement in another column, made by I. J. Mechi, Esq., of an extraordinary outlay upon an estate of his in Essex. Boldly, indeed, has he questioned the policy of improvement, with its probable returns. We have seen a barren heath converted into a fruitful farm—we have seen a worthless bog in two short years made valuable land—we know instances of cold clay soils doubled, trebled, and quadrupled, in value, by a very moderate outlay of capital, and the employment of some agricultural skill, but it has never yet come to our lot to witness an outlay so great as that of Mr. Mechi.

We are convinced that the productive qualities of the British Islands are to be augmented to an extent incredible to many and astonishing to all—that our vast and increasing population can be, and *will be* fed from the produce of our own soil; but we are convinced also that it must be by the means taken by Mr. Mechi. If a landlord has not the capital—if he cannot conveniently spare the amount of money, necessary to carry out these improvements, let him at once find tenants who can, and let him give them such leases and other inducements as may be consistent with the present unimproved condition of his farms; the result, we are satisfied, *will be most satisfactory*: any attempt to fetter by legislative enactment the free employment of our land and labour will be then met, not as hitherto by an apathetic indifference, or even a "vigilant inactivity," but by a prompt and energetic movement of landlord, tenant, and labourer; money, it will be insisted, shall share the same fate as land and labour, and if the two latter are to be reduced in value so shall the former. Mr. Mechi promises statistical details of his outlay and plans of his buildings: that by the free dissemination of these he will confer an important boon upon the country he must be aware, and we shall be glad at any time to offer him our columns as a medium of communication. Show that capital 'can, even under the present position of the agricultural interest, be profitably employed, and capital will not be wanting. Hitherto manufactures and commerce, (the former particularly) have run away with the lion's share both of capital and enterprise; but, as manufactures assume a retrograde movement, when their inordinate profits shall be reduced in any sensible degree, then we shall find that attention given to agricultural pursuits they so well deserve, and that mother earth is by no means niggardly in the return she makes for our care of her; and amazing agricultural improvements will result.

AGRICULTURAL REVIEW:

OR THE PRESENT POSITION OF THE BRITISH FARMER.

(Continued from 38 page.)

The recent declaration of the minister that there is no intention on the part of the present government to take any further steps in the direction of the mischievous fallacies of free-trade, which, like many other abstract theories, may sound very well to the ear, and seem very satisfactory to the eye, yet, before the sober truths of practical exposition, will vanish altogether, or be seen to carry with them evils of no common magnitude to the country, is also a source of much congratulation; for though parliamentary promises are on all hands admitted to be at best but dangerous supports for a failing interest to rely upon, yet we feel fully assured that the experiment of free-trade is too dangerous to be tried, unless the burthens upon the soil and the public debt of the country can be effectually diminished in the first instance.

The absence of any extensive importation of foreign corn has caused an advance in the price of that article, and the present prosperity of the manufacturers has created a demand for it and for food roots, which will lead, no doubt, to better terms for them than have been obtainable for the last two years. What the opening of the Canada trade this spring may do in effecting an alteration in the price of grain remains yet to be seen: prices by the last accounts are advancing in the principal markets both of the British colonies and the United States, and this advance, no doubt, has its rise in the corn bill of last session. However, the very general activity in trade throughout the whole of Europe and America which prevails will naturally create a corresponding consumption of food, and this may cause such a divergence of the redundant supplies of certain states, that England, usually looked to as the great market for *grain, may not* probably receive very much *more than, with what we have* on hand, may be sufficient to prevent any great rise of price, a possible occurrence to be very much deprecated for many reasons.

The latest accounts from the principal shipping ports of Europe give the following quotations:—*Danzic*—fine old wheat 38s. to 39s. free on board; new, mixed, 37s. to 38s. freight 3s. per quarter. *Stettin*, old white wheat, 37s. *Odessa* prices are quoted at 16s. to 17s. and state that trade rules dull in most of the Baltic ports, whilst in the southern ports of Europe, prices, notwithstanding there are "no orders" from Britain, are maintained with much firmness.

Under all the circumstances of his present position then we can see no cause for immediate alarm if the British farmer be but true to himself. Above all things we would have him keep "a sharp look out," there are certainly "breakers ahead;" and should he, from the temporary lull of advancing prices, or the declaration of the government, fancy himself riding safely in smooth water, and so relax his endeavours, his enemies, who are ever watchful, will be speedily upon him, and he may unexpectedly find himself upon a lee shore without rudder, chart, or compass.

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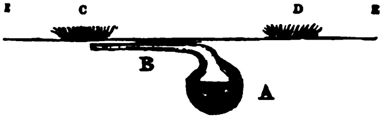
MY OWN THEORY OF VEGETATION, AND THE FOOD OF PLANTS.

I AM not a very deeply read man, nor do I claim credit for a greater share of observation than falls to the common lot; yet I have, like many others, my own notions on the subject of vegetation and the food of plants.

Observation long ago taught me that plants can only receive their food through the medium of two vehicles—air or water: all that is presented to their use must be of a nature to amalgamate with air or be soluble in water. The gas which arises from decomposing animal manure has been shewn by Sir Humphrey Davy to promote the growth of grass. Water, in which the same process has gone on, is well known to have the same effect. Sir H. Davy's experiment was neatly performed in the following manner:—He placed a glass retort, in which rapidly decomposing horse dung was put, in a border of soil, and over the mouth of it he placed a small grass sod, so that the gas arising from the manure came into immediate contact with the soil, into which the roots of the grass would penetrate: near it he placed, on the same border, another piece of the same sod, but without affording it any particular source of nourishment. The following diagram will illustrate what I can readily imagine to have been Davy's experiment:—



(*a*) Would be the bulb of the retort containing the manure; (*b*) the tube along which the gas would pass to arrive at the roots of the sod (*c*); (*d*) being the other part of the same sod without any extra aid; (*e e*) the surface of the soil. The part of the sod placed in contact with the gas from the retort soon assumed a more luxuriant appearance than the other; its food was presented to it in a form immediately available; absorption, the mode in which plants take their food, could go on at once, and continue so long as the supply remained: so it is with inorganic manures; you may present them as food to plants, either in a state of solution with water, and therefore presently available, or in a state soluble indeed, but slowly so, by the aid of the moisture of the atmosphere. Some inorganic manures, lime for instance, acts very powerfully; it is soluble for the most part in water, and by the aid of water is presented in an available form to plants; but its gas also is valuable, for, as decomposition goes on, as solution takes place, a gas is evolved rapidly at first and afterwards more slowly, but the whole time serving as food for vegetation. It has an action on the soil whereby clays are rendered more loose and friable, and sandy soils, in consequence of the moisture it requires and which is naturally drawn to itself by the lime, are more compact and firm in its texture.

From what I have premised it appears to me positive folly to leave manure heaps so exposed that the gasses given out during decomposition shall escape; I, therefore, always cover them the moment decomposition commences either with sand, if the soil to which I intend the manure to be applied be clay, or with road scrapings or clay, if the soil intended to be dressed with it be sandy: by this means I fancy I retain a portion at least of that which, in Sir H. Davy's experiment, caused the grass to grow luxuriantly. Some organic as well as some inorganic manures are so violent in their action that, if applied to plants at once, destruction ensues; these are, therefore, always used in the form of composts. Now an interesting enquiry presents itself, From what does this mischievous action result? Salt, in certain proportions with other fertilizers, is a valuable top-dressing for grass, but if applied by itself, either in a chrystal state or in solution, it will destroy the vegetation. Guano has, I believe, the same effect if applied pure, hence it is either mixed with sand or sifted ashes to be applied to grass land, or well harrowed into the soil, before the grain is sown, when applied to tillage land.

M.

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SWEDES, THE CAUSE OF BARRENNESS.

We lay before our readers the following upon this very important subject. We shall be glad to have any further opinions from our experienced readers.—E. B. C.

With respect to the effect of Swedes in producing barrenness in cows, or causing them to cast their calves, I may say that I have been in the habit of giving my cows, before calving, about 50lbs. of Swedes, per cow per day, and that I have not had a single instance of any of my stock casting their calves or turning barren, (my stock at present consisting of 30.) I should attribute the cause (as far as my judgment goes) to the use of *high-fed* bulls, and also by allowing cattle to be exposed during the winter months to *cold*, wind, and rain, previous to calving. The use of bulls for cattle past 2 years old I consider very detrimental. The bull ought never to be allowed to range abroad among cattle, a system which, I think, is the grand cause of cows casting their calves.—T. H., near Warrington.

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HORSE KEEP.

I WOULD beg to suggest to your readers the value, at this season of the year, of a small quantity of barley to their draught horses; it may be prepared either by steaming with turnips and cut straw, or it may be simply wetted down and left to swell—the law, I believe, will not allow it to be dried again. If prepared in the way first described, a small layer of it may be placed over the turnips, when in the steamer or boiler, covering them previously with a layer of cut stuff or chaff, and then covering the whole well with the same. Horses fed upon this food carry more flesh than can be given them by any other means, and though they sweat much whilst at work, yet, they keep their condition, and soon fill themselves at night, and are soon at rest. In my opinion, it is the best food they can have. A small lump of rock salt in the manger is an excellent thing too for horses at this time of year; by frequently licking it their bowels are maintained in a healthy state, worms are destroyed, the coat lies well, and the spirits are better; indeed, with turnip feeding, either raw or cooked, salt is, in my opinion, decidedly necessary. Of the custom of feeding raw Swedish turnips to cart horses many farmers speak lightly; my own experience leads me to the conclusion that they are better either *steamed or* boiled with chaff, and by adding a small quantity of barley, I think, as I before observed, the best food possible is obtained.

Corn, beans, &c., should, in all cases, be crushed. Before I obtained a mill for this purpose, in all my turnip and potatoe drills where fresh dung was used I found a considerable quantity of oats and beans to spring up from the grains which had passed through the horses undigested: this decided me at once to crush all my horse-keep, and to reduce slightly the amount of corn allowed. I need hardly say I soon repaid myself the cost of my mill—my horses were none the worse for it, and my fresh dung did not produce an unsightly crop of straggling corn or bean stalks.

If hay be at all damaged either in harvesting or in the stack it should be cut and steamed with the turnips instead of straw: if this is done every blade of it will be eaten up, and that too without any injurious effect. If, on the other hand, hay, which is at all mouldy, be offered to horses in the rack, we all know how much it is wasted, and how prejudicial it is to them.

As to the quantity of corn allowed to horses I find not only amongst my neighbours but amongst farmers generally a very great difference in practice to prevail. If horses are well and carefully tended in other respects, 3 pecks of good sound oats crushed, per head per week, will be found sufficient in a general way, except during the period of heavy work, when a peck of beans also crushed may be added; these latter should be taken away again a day or two previously to the work being finished, when, coming upon lighter labour, their usual feed will be found sufficient to prevent any falling off in condition. There is this to be observed in feeding horses, that some will require a little difference in treatment: all horses have not the same constitutional strength any more than all men have; some will require rather more warmth—some rather more corn; some will drink much more water: the arrangement of all this depends upon the stableman, who will also be careful, if he well understands his business, to pair horses for their work, in reference no less to their strength than to their speed. Nothing is to me more annoying than to see a quick-paced horse and a slow one working together, the consequence of which is soon apparent—the slow horse looses spirit and flesh, and is very soon used up, whilst if both horses be quick in their paces, you have a rattling team, which, if not put to it beyond their strength, will get through a great amount of work of any kind, whereas if ill matched the slow horse is but at best an addition, and no inconsiderable one, to the labour of the quick horse, and the work does not get on. O.

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AGRICULTURAL IMPROVEMENTS.

As Agricultural Improvement is the order of the day, allow me to mention an extreme case—the expenditure of £5200 on a Farm of mine, 130 acres (Tiptree Hall, near Kelvedon, Essex,) that only cost £3250. In due course, when the results are accurately ascertained, I shall deem it my duty to submit statistical details and drawings of the buildings to every Agricultural Society in the Kingdom, in the hope it may give confidence to those who, having the means to improve their property, are doubtful as to such improvements paying a remunerating profit to both Landlord and Tenant. The expenditure above-mentioned has been appropriated to—1st. The perfect and permanent drainage of the land with stones and pipes, 4 yards apart, and 32 inches deep—between 80 and 90 miles of drains.—2nd. To the entire removal of all timber trees, which cannot be profitably grown in Corn Fields.—3rd. To the removing all old, crooked, and unnecessary banks, fences, and ditches.—4th. The cutting new parallel ditches and fences, so as to avoid short lands.—5th. The inclosure of waste, and conversion of useless bog into good soil.—6th. The economising time and distance by new roads, arches, and more direct communications with the extremities of the Farm.—7th. The erection of well-arranged farm-buildings built of brick, iron, and slate in a continuous range, excluding all cold winds and currents of air, but open to sunny warmth.—8th. The building a substantial and genteel residence, with all due requisites for domestic comfort and economy.—9th. The erection of an efficient threshing machine, and needful apparatus for shaking the straw, dressing the corn, cutting chaff, bruising oats, &c., so constructed as not to injure the straw; avoiding, by its perfect action, that immense waste of grain visible in almost every truss of straw we examine.—10th. The avoidance of thatching and risk of weather, by ample barn room, with convenience for in-door horse labour at thrashing, &c., when not employed without, so as to have no idle days for man or beast.—11th. The saving of every pound and pint of manure by a tank (90 feet long, 6 feet deep, 8 feet wide, with slated roof facing the north, and with well and pump,) into which is received the whole drainage from the Farm-yard and stables.—12th. The conveyance by iron gutters and pipes of every drop of water from the roofs of each building, so as in no manner to dilute the manure in yards.—13. The perfect drainage of the foundations of the barn, and every building on the Farm.—14th. A steam-house to prepare food for cattle. I am thus particular in detail, because it is from each of the above branches of expenditure that some portion of remuneration is expected. But, during the progress of my undertaking I have been warned, entreated, and dissuaded by my farming friends, who protested that a profitable return for such an enormous expenditure was impossible; my calculations, however, were made, and mere assertions without facts and figures weighed nothing with me. Although the operations were only commenced early in 1843, the results, so far as they go, are gratifying and convincing. As one instance of success, a field of oats, sown on the 16th of May, after drainage, was harvested and stacked, before another (sown two months earlier on better but undrained land) was ready to cut. Hereafter you shall have detailed statistics of every department in which saving is effected and increase produced. In a moral and social point of view, these improvements have acted beneficially. They have excited the energies of the Tenant and his Labourers, stimulating them to think, compare, and improve. They have awakened the attention and curiosity of the neighbouring farmers, who are watching the result, and already have they caused many undertakings in drainage, which otherwise would not have been thought of. Had I invested my money in the Funds, there would have been an end of the matter; but now I nave the satisfaction of having fulfilled a public duty (without injury to myself) by calling into action, temporarily and permanently, a considerable amount of labour. I conceive *that* the highest order of charity, which, by providing employment to the willing Labourer, confers a favour unseen, and leaves uncompromised (his most valuable privilege) his self-dependence.

If every one who has the means follows my example, where requisite, there will be little need to complain of the want of employment for our peasantry or our capital. Whilst every thing has been done for the Farmer's profit and comfort, the Cottagers have not been forgotten. A few gutters and pipes to their residences, and some draines in their gardens, have rendered the former *dry* and *healthy* and the latter *productive;* and this at the trifling cost of a few pounds. I may be asked, " What can you, as a Londoner, know about Farming?" I will answer, " I always loved the beauties of nature, the pure air of Heaven, the spots of the field and the hospitality of our honest yeomen. I have seen one Farmer making a fortune, and his next neighbour losing one. I have seen one field all corn, and another nearly all weeds."

I asked, " How is this?" I enquired into the causes: I noted the results. I obtained from all the best Farmers and all the best Agricultural books within my reach, every information bearing on agricultural pursuits. I practised on my own little garden, on a small scale, a variety of experiments; and after carefully weighing the evidence, I come to the conclusion, that want of drainage, both in land and buildings, waste of manure, shallow ploughing, and short leases, are amongst the greatest curses to this country; and I, as far as my individual means will permit, am resolved on remedying them.—*I. J. Mechi,* 4, *Leadenhall Street, London, March* 15*th,* 1844.

P.S. As Tiptree Heath is notorious for poor land, and as the Essex farmers, generally, are extremely sceptical as to these improvements answering, I would recommend their inspecting the crops (there will be no long fallow) about July next; and then, having the facts before them, they will be enabled to draw correct conclusions. I may as well add, it is intended to trench-plough and disturb the soil to the depth of fourteen or sixteen inches. The Implements used on this Farm are, Crosskill's clod-crusher roller and liquid manure cart, Lord Ducie's drag, and Barrett, Exall, and Co.'s subsoil plough. The threshing-machine is constructed under my own direction, by Mr. Bewley, of Chelmsford, on the Scotch principle.

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LIME AND SALT.

The following appears in the *Gardeners' Chronicle and Agricultural Gazette* of the 23rd instant:—

> " *Lime and Salt.*—I tried this mixture on two acres of old grass land, having mixed them in the proportions recommended by Mr. Cuthbert Johnson. A heap was made, and the lime and salt were laid in alternate beds, then mixed up together, and well covered over with soil and sods. After three months this was applied to

the meadow in question; it was in a state resembling mortar, and was with difficulty spread; after it became dry, it was beat to pieces, and spread and bush-harrowed. In many parts of the field the grass appeared as if it was scorched. It did not grow luxuriantly, and the crop was the worst I ever had—in some parts not worth cutting.—*Northumbriensis.* [Possibly too much was applied.]

The foot note is that of the Editor. We would suggest to *Northumbriensis* that possibly his lime and salt ought to have been mixed under cover. We are not surprised to find them in three months, with no other protection than the soil and sods spoken of, in an unfit state for applying to the land. We quote from recollection, but we think Mr. C. Johnson expressly states that the mixture of salt and lime should be prepared under a shed, and that it should be turned repeatedly and intimately mixed, during four months, when, at the end of that time, a new salt will have been produced, easily distributed by the hand. An intelligent neighbour of ours has tried this mixture two years, and only delays giving us the result of his experiment until he shall have had the corroboration of a third year to the success of the two previous ones.

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African Guano.—This natural manure is said to possess as great value as that imported from South America. An analysis of that recently imported into Liverpool has been made by Mr. Huson of that town, and the following given as the result:—

Guano from Ichaboe, Western Africa.	
Moisture (water)	16.5
Free ammonia..	6.5
Ammoniacal salts, chiefly urate and phosphate of ammonia	52
Carbonate of lime	6
Organic (animal) matter, with phosphate of lime, traces of oxide of iron, and an inappreciable amount of silica	19
	100

We shall be glad to hear that its cost is less than that from Peru: some ancient restrictions by the government of that country renders American guano more costly to the importers than need be, and consequently it cannot be produced to the consumers at anything like the prices it could be afforded were its original cost less.

Caution to Farmers.—The following extract will show the danger and folly of the practice of keeping milk in zinc bowls, a custom which has lately become very prevalent, these articles being sold with the recommendation of a larger quantity of cream being produced, owing to galvanic action. "I would scarcely have believed," says Dr. Elaines, of Berlin, "that zinc vessels could again have come into use for holding fluids used for alimentary purposes, as Vaquelin forty years ago proved that such were certain, after a short time, to hold a considerable portion of zinc in solution. I have found by experience that a solution of sugar, which had stood only a few hours in the summer in a zinc vessel, contained a considerable amount of zinc salts. It has been often stated that the cream will separate more easily from milk if the latter be kept for a short time, in a zinc vessel. As, however, it is known that milk will turn acid much sooner than a solution of sugar, it is the more to be apprehended that some zinc will be dissolved, and such milk will be the more noxious, as it is well known that even a small amount of zinc will cause violent spasmodic vomiting."—*Pharmaceutical Journal.*

Ventilation of Cowhouses.—Every one knows that pure air is necessary for respiration, and that air on being used by the lungs is expelled in a deteriorated condition, and rendered unfit for being again inhaled. If, therefore, cowhouses are not properly ventilated, the air becomes foul from the respired air, as well as, perhaps, from impure exalations, and the air so deteriorated is rendered unfit to maintain health. In the neighbourhood of large towns, too, there is another predisposing cause to disease, viz., the unnatural forcing of a cow's milk by a too liberal supply of brewer's draff. Fresh supplies of air, that the blood may be purified, are real objects of a respiratory apparatus, and if the blood that goes to the lungs is returned to the system in the same state as it is sent, death will be the consequence, for venous blood is poison to the body. It does not often happen that imperfect ventilation produces immediate death, but it is too often the real cause of inflammation fever, and deadly distempers.—*Correspondent of the Mark Lane Express.*

The Black Leg in Calves.—Abundance of good food and a dry warm shed at night, appear to be the only preventive of this distemper. A late writer, of great experience, gives his newly-weaned calves about a pound of oil cake daily, until they begin to eat grass freely; and about one and a half daily, with turnips, the following winter; he never has an instance of the disorder amongst his young stock.

Grass-seeds.—Mr. Lawson in his "Agriculturist's Manual", recommends for deep mossy ground, per acre, intended to lie in grass, Agrostis stolonifera, 2 lbs.; Alopecurus pratensis, 2 lbs.; Festuca duriuscula, 2 lbs.; Lolium perenne, 6 lbs.; L. Italicum, 3 lbs.; Phleum pratense, 2½ lbs.; Poa trivialis, 2½ lbs.; Trifolium repens, 6 lbs.; Lotus major, 1½ lbs.; and Rye, 1 bushel.—*Permanent Grass.*—For light land shaded with trees, Agrostis vulgaris, 1 lb.; Anthoxanthum odoratum, 1 lb.; Dactylis glomerata, 5 lbs.; Lolium perenne, 8 lbs.; Poa nemoralis, 4 lbs; P. trivialis, 2 lbs.; Trifolium repens, 3 lbs.; with an ordinary seeding of Barley.

Pea-Straw.—At a lecture of the Rev. Mr. Sidney, at Acle, Norfolk, the Rev. gentleman drew attention to the waste of bean and pea-straw. It was cut too late. He gave the analysis of each as to nitrogen and gluten, which showed that 74lbs. of pea-straw, and probably of bean-straw also, equalled in nutriment 100lbs. of common hay—a fact most important for farmers here, and well known in Scotland.

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PIG FEEDING.

In fattening pigs I have always found a mixture of barley and peas-meal, moistened with milk in sufficient quantity to make it of a drinkable nature, to be the best; the pigs must be rung to make them lie quiet; the sty must be warm and airy, and the sun not suffered to scorch their backs, as thin-skinned white pigs are blistered by it, which not only renders them of an unsightly appearance, but retards their thriving; neither can they bear exposure to cold winds, or cold rain, or sleet, or snow—they must be kept out of all these. This is not sufficiently attended to: on many farms you see them lying in heaps shivering with the cold; in such cases thriving is out of the question; and, on the other hand, I have seen them immured to the height of four feet with a low ceiling above them, leaving a space of a foot and a half for a current of air; in this case they looked very delicate and sickly, like consumptive subjects, and never arrived at any size or weight for their age; their constitution was undermined by being kept constantly in a pestilential atmosphere; whereas, had the door been an *open*-barred door, a current of fresh air would incessantly have set in and purified the place, and given the animals a vigorous habit and a doubly-increased size.—These extremes should be carefully avoided, and in addition, too much cleanliness cannot be observed, for nothing tends more to their well-doing than dry feet, a dry bed, and sweet air. They wallow in mud, it is true, in the summer, to get a coat to shield them from the sun and flies; but that only proves that they require protection from excessive heat and the teazing of flies; and all who wish their pigs to thrive will provide shelter.

My pigs are never allowed to run about, as no food they can get by prowling about will compensate for the loss of flesh sustained by the continual state of motion. In a farm it may be very well to have some running about to pick up dropped offal, but where the pigs are regularly fed with a sufficient supply, it is a thriftless plan to waste by exercise the flesh that by a state of rest would make a good return for the food consumed and the expense of attendance.—*J. Steele, Gar. Ch.*

Horticulture, &c.

Notices of New Plants which are either useful or ornamental.—Nelumbium Caspicum. Caspian Nelumbium. *(Stove Aquatic.)* Nelumbiaceæ. Polyadelphia Polygynia.—We are happy to have an opportunity of publishing this, not only for its own sake, but because it affords an opportunity of pointing out the true distinction between the Caspian and Indian Nelumbia. According to M. De Candolle all the Nelumbia found in various parts of Asia are varieties of one species, and this opinion is generally adopted. It is, however, difficult to believe that the deep red Nelumbium of India, with very sharp-pointed petals, can be the same with the blunt-petalled white-flowered plant "found at the mouth of the Volga, near Astrachan, in a part of the river called Tschulpan, amongst reeds intermixed with Nymphæas and Trapa," which, according to Messrs. Fischer and Steven, is the locality of this plant. M. De Candolle indeed suspected that it must be different, but he did not remark in the dried specimens examined by him any character beyond the bluntness of the petals and their general uniformity in size, and upon that distinction he was unwilling to rely. The true difference seems to consist in the very small number of carpels, which do not appear to exceed nine, while in the great Indian species they are as numerous as thirty or thirty-three. Speaking of N. speciosum and its supposed varieties, Dr Roxburgh writes as follows :—"I have met with only two sorts on the coast of Coromandel, one with rose-colored flowers, the other with flowers perfectly white, and since that time a third variety has been brought from China with smaller rosy flowers. They grow in such sweet water lakes, &c., as do not dry up during the driest season, and, on the coast, flower all the year round. In Bengal they flower during the hot season, April, May, and June, and ripen their seed about the close of the rains. In China there is a still more beautiful bright crimson variety, which they call Hung-lin ; I have hitherto only seen a drawing of it. The white Nelumbium differs in few respects from the red one, and may be considered as only a variety of it. The tender shoots of the roots between the joints of both sorts are eaten by the natives, either simply boiled or in their curries. The seeds are eaten raw, roasted, or boiled. The leaves are used to eat off instead of plates. These holy and beautiful plants are often met with in the religious ceremonies of the Hindoos under their Sanscrit name *Padma*." It is a stove aquatic, requiring to be kept dry during winter. Before putting it into the water which ought to be done about the beginning of February, it sould be repotted in sandy loam mixed with pieces of sandstone, to act on the same principle as drainage, for the water in which it is grown requires to be renewed once or twice a week, and should never be allowed (especially in summer) to be below 80°. About the end of October, when the leaves begin to decay, the pot should be lifted out of the water and dried off gradually. As the soil becomes dry it will crack or leave the sides of the pot, which should be filled up with sand, in order to cover many roots that would otherwise be exposed.—*Botanical Register.*

VERBENAS.—When you plant verbenas, peg down the branches in the direction of the vacant spaces of your bed ; they will readily take root, and sending forth fresh branches in different directions, the surface of the bed will soon be completely covered. We recommend V. Symondsii, which is a brilliant orange scarlet, a prolific bloomer, and one easily preserved in the winter. In September, when the plants are growing vigorously, it is a good plan to sink some small pots in the earth, filled with soil, and passing a branch over it, peg it down upon the earth ; the pot will soon become filled with roots, when it may be cut from the parent plant : these should be re-potted and encouraged, and when winter approaches, put them into a cold frame, or bring them into the house ; give very little water during the winter.

FRUIT-TREES.—The following are good dessert *Apples* :—Early Harvest, Pearson's Plate, Golden Reinette, Golden Harvey, Court of Wick, Reinette du Canada, Court-pendu Plat, Boston Russet, Sturmer Pippin. For Kitchen use—Dumelow's Seedling, Alfriston, Bedfordshire foundling, Dutch Codlin. *Pears*—Marie-Louise, Beurré Bosc, Hacon's Incomparable, Glout Morceau, Passe Colmar, Thompson's Winter Nelis, Beurré Rance ; and for Baking the Catillac. *Plums*—Royal Hâtive, Reine Claude Violette, Kirke's Washington, Coe's Golden Drop.

PEAS.—The "British Queen," the same as Knight's Tall Marrow Pea, grows to the height of 6 or 8 feet. Some of it may be sown now, and more in the end of May, for a late crop.

KIDNEY POTATOES.—A correspondent states that he planted a few early Kidney Potatoes in an old Pine bed in a Vinery, about the beginning of December. He put about two feet of leaves in the bed, and covered the tubers about nine inches deep with soil. They came up very strong ; but being far from the glass they became drawn. When they were about 18 inches high, he pinched about half an inch off the leading shoots of part of them, leaving a few untouched. Those that were stopped began in a few days to form Potatoes, but those that were not stopped produced only a bunch of fibres. Of the former a very fair crop is now ripening off, and he says that any kind of pit, however far from the glass, will answer the purpose under this treatment.—*Gar. Chro.*

BEET.—The sweet flavour in the beet root seems to depend much on the soil ; for the best sorts will taste earthy in some gardens, where inferior kinds are not so. The red Castelnaudary, when it can be obtained genuine, is best coloured ; and it is much esteemed for its superior flavour. It is small in its whole habit, and, occupying little space, may be sown closer than other kinds. Beet requires a deep, rich, and rather light soil, to prevent its growing forked ; and being impatient of frost, it should not be sown until all danger of destruction from that is over.

METEOROLOGICAL & RURAL OBSERVATIONS.—WINWICK, MARCH 21st, 1

FEBRUARY continued stormy until the end, fulfilling completely its acquired cognomen of " ruary fill dike," so that all descriptions of rural labour was kept in a rather backward state, o to the excessive moisture with which the earth was charged.

March commenced with a brisk wind, but rather too showery for farming operations. 11th and 12th were stormy days, a strong fierce gale having set in from the west, accompa by violent hail storms. From this point it changed to the N.W., where, after a successio gusts, it died slowly into a moderate breeze. From the N.W. the wind went by degrees to E., from which quarter we had some bitter piercing airs, which, on the morning of the 16th, creased to a strong gale, becoming more violent towards night, but gradually died away on following day.

Sunday the 17th was a fine clear day, but cold, with a piercing east wind, which swept, great measure, the superabundant moisture from both earth and air.

Yesterday was stormy again, but gradually abated as the day declined, this morning the of the blessed heavens being again cleared from its sullen veil of clouds, and presenting an as truly calm and serene; whilst the broad expanse is illuminated with the undimmed rays o all-glorious sun.

CALENDAR.

Feb. 25. Rooks (corvus frugilegus) begun to build.
Mar. 1. Polyanthus (primula polyantha) in bloom.
Mar. 6. Dandelion (leontodon taraxicum bloom.
" 15. Lambs begun to fall.
" 18. Coltsfoot (tussilago farfard) in blo

ATMOSPHERICAL OBSERVATIONS, FROM FEB. 21st to MARCH 20th, 1844.

WEATHER.	A. M.	P. M.	Even.	Days.	N.	N.E	E.	S.E.	S.	S.W	W.	N W	Total obs.	
					PREVAILING WINDS.									
Clear	3	2	8	1	3	2	4	0	0	2	0	2	13	
Fine	8	13	11	5	7	3	2	0	2	3	5	10	32	
Fair, cloudy............	2	2	1	1	0	1	3	1	0	0	0	0	5	
Rain	16	12	9	22	2	1	8	3	3	4	12	4	37	Sun show
Total	29	29	29	29	12	7	17	4	5	9	17	16	87	A.M. 21; 18; day
	A.M.	P. M.	Days											
Frost	13	10	16		4	4	7	3	0	1	0	4	23	
Snow	2	4	5		0	1	2	1	1	0	2	1	8	
Hail	1	2	3											
....	0	0	0		0	0	0	0	0	0	0	0	0	

FORCE OF WINDS.

FORCE.	N.	N.E	E	S.E.	S.	S.W	W.	N.W	Total.
	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob
1 Calm, or gentle breeze	3	3	0	2	1	2	2	2	15
2 Moderate wind	8	2	12	1	4	4	7	7	45
3 Fresh breeze	0	2	1	1	0	3	4	4	15
4 Strong wind	1	0	4	0	0	0	6	1	12
Mean Force	1·9	1·8	2·5	1·75	1·8	2·1	2·7	2 3	2·27

FALL OF RAIN.

	Days.	Dep in. d
From Feb. 21st to 29th..	8	1·68
" Mar. 1st to 10th..	6	1·11
" " 11th to 20th..	7	1·62
Total	21	3·41

ATMOSPHERIC PRESSURE.

	Max.	Min.	Mean.	
	in.		in.	
Height	30 25	28 30	29·4444	M.Mh.7, 8Fb 23
Diurnal varia	·90	·02	·3376	Mn.Fb. 26M2, 8

Utmost range or greatest variation .. 1·95 in.

TEMPERATURE.

	Max.	Min.	Mean.	Max.	Min.
	o	o	o		
Max. or Solar Tem	54	37	45·276	Mar. 3	Mar.
Min. or Lunar do.	36	15	27·069	" 9	Feb.
Mean: Diurnal do.	44·25	29 25	36·043	" 9	"
Diurnal variation.	29·0	4·0	18·293	" 5, 6, 18	Mar

Utmost range or greatest variation........39·.

The following comparison of the temperature and quantity of rain is made between an account taken Chiswick Gardens, near London. The comparison refers to the month of February, 1844 :—

	Winwick.			Chiswick.		
	Max.	Min.	Mean.	Max.	Min.	Mean.
	o	o	o	o	o	o
Max or Solar Temperature	51	38	43·24	53	32	44·44
Min. or Lunar Temperature	40	15	25·34	43	19	28·55
Mean Diurnal Temperature	42.75	28·75	34·40	48·0	27·50	36·50

Rain ....18 days..2.in·9625dec........18 days..2·in270 dec.

Winwick, Mar. 21st, 1844. EDWARD ROTHWELL.

LINSEED FOR CALVES.—Boil 1 pint in a gallon of water; you need not soak it in water first. Give your calves from 1 pint to 1 quart of the jelly daily, according to their age. Give 1 pint to horses along with their chaff, &c. twice a day. It will not improve the milk, if given as food to cows.—*Gardener's Chronicle.*

CATTLE INSURANCE ASSOCIATION.

An association has been formed in London to be called the "*Farmers' and Graziers' Mutual Cattle Insurance Association,*" and the following is the statement of its objects with the proposed provisions for carrying them out:—

1. The especial object of this Association is to give to Farmers, Graziers, and Owners of Cattle, the best means of protecting themselves against losses by those diseases, which they can neither foresee nor control, but which have hitherto been most injurious, and often ruinous to thousands.

2. In effecting this, two great principles must be kept in view viz., *Economy* and the *Prevention of Fraud.* To secure *economy* the Association is *mutual.* Nobody can be benefited by charging too high, save the subscribers themselves; none injured by paying too little but the subscribers themselves, should they become claimants.

3. To *prevent fraud* no owner will receive in any case more than two-thirds of the bonâ fide value of his loss, and from which will be deducted two-thirds of the value of the skin and carcase of the animal.

4. Subject to these leading principles, and some other regulations, the whole of which cannot be set out in this prospectus, the Association will insure the NEAT CATTLE and Cows (excepting Cows kept in towns) of all they consent to admit as Associates, against death, whether occasioned by sickness, contagion, *pleuro-pneumonio,* or by the slaughter of the animals in consequence of being tainted with any disease.

5. The Association, however, will not pay for animals *which may die of blows,* wounds, fractures, strangulation, bad treatment, or neglect, or owing to any disease with which they might be affected before they were assured. They must be in a healthy state when offered, and not neglected afterwards; otherwise, the contract will be void.

6. An owner may insure his Stock, and sell, exchange, substitute, or increase, up to the value he insures; but he must never increase the value of his stock beyond the value for which he has paid, without effecting a further insurance, and paying in proportion, otherwise he will forfeit his contract.

(Graziers in the habit of constantly changing their Stock, when insured, will be permitted to do so, upon payment of a small additional per centage.)

7. The owner of cattle may have the choice of either having his stock valued by the Inspector of the Association, and paying upon the full amount, and receiving two-thirds the market value of the animal dying (i.e., the value of it the day before the disease manifest itself,) OR, of making his own estimate and average, and receiving two-thirds of the said value of the animal dying, *provided* such value be not more than the average he has specified; and when of smaller value, two-thirds of such smaller value only, the Committee having power to grant additional compensation, should they see fit.

8. The Association will not interfere with the treatment of the usual Veterinarian or Farrier of the owner, unless by his own wish; and should they so interfere, they will pay the expense out of their own funds. In all cases of serious sickness, however, the Association will require immediate notice to be given to the Agent and Inspector.

9. If the Veterinarian recommend that the sick animal ought to be kept separate from the rest, it must be so separated, or the contract with the Association will be

void as regards any loss arising from contagion.

10. In extreme and urgent cases the owner will be allowed the power to slaughter sick animals, *provided* it appear that he would have sustained injury by not doing so before the Inspector could arrive; the propriety of so acting to be certified by the Inspector.

11. A reserve fund of 5 per cent. per annum, to form a guarantee fund for the Association to the extent of £50,000, to meet extraordinary losses, will be made.

12. Should the rates charged be more than sufficient to meet the losses, expenses, and contribution to the guarantee fund, the Association may place to the credit of every one assuring, his proportion of the surplus in reduction of his premium of insurances for next year.

13. A consulting Veterinary Surgeon, being a Graduate of the Colleges of London or Edinburgh, or more than one if required, will be appointed to each Agent's district.

14. The insurance will only extend to cattle upon the farm or lands specified in the policy.

15. In the event of any person being insured in any other Society, notice must be given, in order that an indorsement may be made upon the policy to that effect.

PREMIUMS:

Neat Cattle and Cows, against death by all diseases save *pleuro-pneumonio*, (usually called the "Epidemic,") 30s. per £100 value.

Including *pleuro-pneumonio*, 20s. per cent. additional; being at the rate of 50s. per £100 value.

Pleuro-pneumonio will *not* be taken alone at this latter rate.

Animals under two years' old will not be insured against the disease called Quarter-ill or Black-leg.

Proposals may be entertained for taking Insurances for half-a-year.

The rates of Premium to be charged for *Horses are under consideration.*

In our next we will endeavour to s before our readers our views upon this sul ject, admittedly one of very great impo tance to the Agriculturists of all classes.

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DEBENHAM FARMERS' CLUB.

The subject of artificial manures was di cussed at the meeting of this club on th 2nd inst. The gentleman who introduce this subject said, that last year he had trie several kinds of artificial manure to a sma extent, with a view of testing their com parative fertilising qualities, and from th success he had had with some, he was in duced to increase his expenditure this yea to £30. Last year he was of opinion h applied the different artificial manures t late (the latter part of April,) this yea he should commence immediately. H had tried guano, gypsum, nitrate of soda saltpetre, and urate. Last year he top dressed a piece of Wheat (every othe ridge) with 2½ cwt. of guano per acre, at cost of 28s. per acre; he had taken wit the greatest care an equal quantity (b measure) of the produce where top-dresse and where not top-dressed, and having ha them kept and threshed separately, h found there was an increase of eleve bushels per acre where he had applied th guano, beyond the produce of that wher no guano was applied, and a proportionat increase of straw. From a top-dressing o one cwt. of nitrate of soda applied to wheat alternate ridges, he had an increase of si bushels per acre, cost per acre 26s.; fron saltpetre about the like increase—but th cost per acre more than for soda: wit both soda and saltpetre there was an in crease of straw. He had applied urate a the rate of 5½ cwt. per acre, cost 28s. pe acre, but without benefit from its use. H had also tried an experiment with the abov manures on clover last year, each at a equal cost per acre; he had sown two ridge with guano and gypsum, two with guan alone, two with gypsum alone, and two wit urate alone. He had the greatest produc from the guano and gypsum;—from guan alone, good; from gypsum alone, good from urate, not so good as from the othe artificial manures. He believed the pro duce from the guano and gypsum wa double, compared with the other part of th field where no manure whatever had bee applied.—Another member stated that h had had a small quantity of guano sent t him last year, with directions for sowing, which he strictly complied with. He top-dressed a spot in his turnips, which were up and fit for the hoe; it was a decided failure—indeed, the turnips so top-dressed were the worst in the field. He had also used a small quantity on grass land; the effects were soon visible; the grass there soon outgrew the rest of the field, for which there was a good reason—the cattle grazing therein would not eat the grass when top-dressed with guano, it was so very rank; thinks probably too much was applied, or that it ought to have been mixed with ashes or mould; he had used nitrate of soda as a top-dressing for grass land, which produced a visible increase.—Another member said he had used soot as a top-dressing for wheat, and found an increase in the quantity both of straw and grain. He had watched an application of rape cake, burnt earth, and farm-yard manure, for turnips; the proportion used was as follows:—rape cake one third of a ton per acre, drilled in with the seed; 90 bushels of burnt earth, also drilled; and about 15 chaldrons per acre of farm-yard manure; the other part of the field was manured with pig manure, and from it the best turnips were obtained; the next best, where the rape cake was applied; from the common farm-yard manure and burnt earth, the turnips were about equal. He had also examined the barley which succeeded the turnips; the pig manure had the preference, then the rape cake, then the farm-yard manure; the burnt earth appeared there to have lost its power.—Another member said he had seen a field of turnips where the occupier had manured with the best bullock-yard manure which, falling short, he had finished the field with rape cake; where the rape cake was used there were two thirds more turnips than where the bullock-yard manure was applied.—Another member said he had top-dressed part of a field of wheat with soot, about 25 bushels per acre, from which the increase was four bushels per acre.—As but few artificial manures had been tried, and those only to a small extent, it was thought advisable by the club not to come to any resolution on the subject this evening, but from what had been stated, it was hoped many of the members would be induced to try as many of the artificial manures as convenient, both as top-dressings for wheat and also for Clover and Grasses, and that they would report the results of such experiments to some future meeting of the club.—*Wm. Green Secretary.*

ROYAL AGRICULTURL IMPROVEMENT SOCIETY OF IRELAND.

At a weekly meeting on the 21st of March the Secretary stated that at a late Special Meeting of the Council, Lord Castlemaine in the Chair, letters were read from Mr. Smith, of Deanston, stating that he was then in the North of Ireland professionally engaged, but that he would willingly comply with the wishes of the Society, as far as his time would allow him, to inspect the lands belonging to the different competitors for the Society's Medal for Thorough Draining. The Secretary was ordered to intimate to Mr. Smith, the sense of the council for the prompt and ready way in which he acceded to their application, and for the terms upon which he undertook the duty, and to request that he would proceed at once to inspect the lands belonging to Lord Dufferin and Claneboy, at Ballyleidy, Mr. John Andrews of Comber, both in the County Down, Sir Richard O'Donnell of Newport, in the County of Mayo, and of Lord Courtown in the County of Wexford—these four having been selected from the other candidates, on the ground of having executed the greatest quantity, and that Mr. Smith should furnish his report thereon to the Council, before the 9th of April.

The secretary stated that only forty-two of the local farming societies had as yet complied with the late regulation, namely, that five of their members at least should be common to both societies, or that a sum equivelent to five annual subscriptions, of one pound each, should be contributed by each local society, to the central one, in order to qualify them for receiving the society's premiums this year; and as the first of May was the last day for receiving communications upon the subject, the secretary was directed to communicate with the different local bodies which had not yet intimated their intention upon the subject, in order that their names may be included in the list of those local societies, to which premiums would be awarded this year.

The secretary laid on the table the report of the sub-committee, on reclaiming waste lands in Ireland, relative to the essay or report of Wm. Steuart Trench, Esq., upon the subject for the society's medal. The report which was prepared by Acheson Lyle, Wm. Sherrard, and Wm. Jones Armstrong, Esqrs., entered fully into the subject and stated that they considered the claimant fully entitled to the medal, for the spirited and enterprizing way in which he had executed the work, and also deserving of considerable praise for the mode in which the subject has been treated in the report itself. They felt however, that it was deficient in some respects, particularly as regards the different items of expenditure, which appear not to have been as fully given as they would have wished, and for this reason the report together with the observations of the sub-committee were ordered to be referred back to Mr. Trench, to make such observations by way of notes and commentaries, as he should desire, in order to make the work the more valuable for publication in the society's transactions this year.

The sub-committee, for perusing the essays on manures, as applicable to this country, were inclined to pronounce a verdict of "no merit" upon the different productions which had been submitted to them for their decision; and, if the funds of the Society would allow it, it was recommended that some more substantial prizes in money should be given, for the purpose of procuring valuable information upon the subjects more directly connected with Ireland, and of giving them general publicity among the farming classes.

The secretary stated, that it appeared by the report of a late meeting of the council of the Royal Agricultural Society of England, that their noble chairman, the Marquis of Downshire had communicated to that body, pursuant to instructions to that effect, the great desire of this society to promote the establishment of an uniform system of weights and measures throughout the united kingdom, for the sale of agricultural produce, in order to facilitate and increase as much as possible, the free intercourse in commercial and agricultural arrangements between the three great integral portions of the kingdom reciprocally. The noble Marquis also enclosed in his communication the particulars of the plan proposed by Mr. Blacker, of Armagh, to effect this desirable object; but as it appeared to be the ultimate result of Mr. Blacker's recommendations, to establish the proposed uniformity, through the medium of an act of parliament, the council doubted whether by the distinct legislative neutrality enjoined upon their discussions and proceedings by the strict and exclusive condition of the Royal Charter, they were at liberty to entertain the proposition, but they agreed to receive the communications with thanks, and to refer *them to the* consideration of the monthly *council of the society.*

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A weekly Council was held at the S ciety's House in Hanover-square, the 20t of March, T. R. Barker Esq., in the chai

Burnt Clay.—His Grace the Duke o Richmond having transmitted to the Council the results of Mr. Page's experience in the application of burnt clay, the communication was read to the meeting. The report stated the length of time during which the burnt clay had been used on the farm, the mode in which it had been prepared, the quantity applied to the land, the time of year, and to what crops, concluding with the following statement of its effects:—"I have known," says Mr. Page's servant, "that in a wet cold season it beats all other manure for turnips: of course it keeps our stiff lands from congealing together, giving the seed power to vegetate stronger. I never earthed any without seeing an improvement made. All I can say about it is, that it certainly answers on wet, cold lands: it will increase the barley crop two coombs per acre. I do not think it answers so well for wheat as for barley. It has been used on the farm for 20 years upon a small scale, but for the last six years very plentifully; last year, had the season allowed me, I should have burned 600 loads."

Model Experiments—Mr. Miles, M.P., informed the Council, that Mr. Pusey, in his capacity of Chairman of the Journal Committee being desirous that as much practical matter as possible should be communicated to the Society, and under such an uniform statement of the plan adopted as would lead to direct inferences on a comparison of the results obtained, had suggested to the Journal Committee that a prize should be given to promote that object; a proposition that had been unanimously adopted by the Committee, and of which the details would in a short time be laid before the Council, and the conditions of the prize made public.

Mr. Miles was anxious to see the model experiment on the growth of turnips, which on a former occasion had been recommended by the Council to those members of the Society who had the means and opportunity for engaging in such inquiries, repeated on an extended scale, embracing in its plan not only a trial of the different manures on a root crop, such as that of turnips, but also on a grain crop—as, for instance, that of barley—made on not less than an acre of ground, and weighing the produce of not less than half an acre; the trial being tested not only by the resulting weight of turnips, but also by that of the barley. He thought that such an experiment would be important and interesting in many points of view; and as it would be desirable that in this, as in the former model experiment, the seed should be obtained from a given and genuine source, he then gave notice, that the attention of the Council having been called to the circumstance of there being at present no duly appointed seedsmen to the Society, he should move at the next monthly Council, that Messrs. Thomas Gibbs and Co., of Half-Moon-street, Piccadilly, the parties who had always been engaged by the Society to furnish seed for the model experiment, and to test by cultivation the various samples of seeds and plants, from time to time, referred to them by the Council, should be officially appointed the seedsmen to the Society.

Southampton Meeting.—A meeting of the General Southampton Committee was held on Thursday last, Colonel Challoner, Vice-Chairman, in the chair; at which the recommendations of the Committee, respecting the plans of the Pavilion and Show-yards, at the ensuing country meeting in July, were finally determined upon, and ordered to be reported for confirmation to the monthly meeting of the Council on the 3rd of April.

THE YORKSHIRE AGRICULTURAL SOCIETY.

(Continued from page 52.)

"*Report of the Judges appointed to inspect the Farms entered for the Prize and Sweepstakes proposed by the Yorkshire Agricultural Society*, 1843."

"Our next inspection was Mr. Coulman's farm at Wadworth. The arable land is of high quality, and well adapted for the turnip four-course rotation, in which it is cultivated. As upon all well-managed farms, all the crops were deposited with the drill or presser. The quantity of seed used for wheat, three bushels; for barley, four bushels per acre; and for turnips, two pounds per acre. In the cultivation of these, seven carts of fold-yard manure, and twenty bushels of three-quarter-inch bones were given to the swedes; and six carts of manure, and twenty bushels of bones to the white turnips. Six rows of turnips are drawn alternately for the consumption of cattle in the yard, which are liberally supplied at the same time with linseed-cake; the remainder of the turnips are consumed on the land by sheep, but no cake is given to them.

"The clover, whether for mowing or pasture, is manured the first winter, at the rate of six carts per acre. Nothing could exceed the luxuriance of both the red and white clover. Lucerne and tares are used freely for soiling The liquid manure, carefully preserved in a tank, is applied with much advantage to the grass.

"Draining has been executed to the extent of forty-seven acres, with tiles laid sixteen inches in depth, and at the distance of six yards, at a cost of £5 15s. per acre, exclusive of carting.

"The next farm, Mr. Newham's of Edlington, afforded us great interest. As a tenant farmer, he is peculiarly liberal in his management, both by consuming linseed-cake, to a great extent, and purchasing bones, as the following account, which he delivered to us, of his consumption of these articles for the last four years, will shew:—

YEAR.	Tons of Oil-cake consumed	Bushels of Bones consumed.	Cost of Bones.		
			£.	s.	d.
1839	12	1200	157	10	0
1840	16	1100	151	5	0
1841	22	1000	125	0	0
1842	28	1000	125	0	0
4	78	4300	558	15	0
Average.	19½	1075	139	13	9

"His sheep, from the period of weaning from the ewes, to the time of their sale when fat, whether on turnips or grass, have always a full supply of oil-cake, be the pasture good or closely eaten. His opinion is, that the extra produce of beef and mutton pays for the cake, and that he obtains the prodigious benefit of the superior manure without cost. Certainly the land gains much by the application of linseed-cake, as food for cattle, and we never met with an instance where so much was consumed on a farm of scarcely 300 acres. The bones used are sawings and filings from the button-makers of Sheffield; and being cut with fine saws, they are in a state of powder nearly resembling oatmeal. The price this year was reduced from 2s. 6d. to 2s. per heaped bushel. For turnips, these are drilled with the seed at the rate of twenty bushels per acre, on ridges which have been previously manured. We saw one field of permanent grass, of very bad quality, which had been dressed with twenty bushels of these bone-sawings, per acre, and it exhibited prodigious improvement: they were sown from the hopper in February, 1840, and to try the experiment, parts were left unboned; on other parts, the dressing had been repeated the following year, and they showed an equal ratio of improvement after a double dose.

"The greater part of this farm is land of high quality, on a limestone; but there are nearly 100 acres of inferior clay, which required draining. This has been effected to the extent of eighty-four acres,—ten acres with tiles alone, at £4 per acre, and seventy-four acres, with tiles covered with stone eighteen inches deep above the tiles, which were laid only four yards apart. The expense of this was great, £8 2s. 6d. per acre; but in the opinion of Mr. Newham, it will ultimately be the most profitable. As these stones are, however, brought to within two inches of the surface, it will render subsoiling a difficult operation. Soiling is carried on to a great extent; the draught-horses are maintained upon tares, clover, and dry food. This year, 2 acres of lucerne, and two acres of sainfoin, have been sown close to the farm-stead, for the purpose of soiling. Ten regular draught-horses are employed; the practice is to purchase, annually, two, of two years old, and sell out two, of seven years old,—thus keeping the stock always young. The ewes kept on the farm, on the average of the three last years, have been 122; lambs bred from them, 151, which are sold fat, when shearlings; and in addition to this stock, from 250 to 300 shearlings are bought each September, put upon turnips, and sold fat in the spring. Mr. Newham also *fattens about twenty* bullocks every winter in the yards, with linseed cake, holding besid about twenty cattle of various ages. It chiefly from the vast supply of first-rate manu made from these causes, and the liberal pu chase of bones, that the high condition of M Newham's farm has been obtained. He adop the four course of turnips, corn, clover, an corn, varying the corn crops, but often takin two crops of wheat in a course, and sometime substituting beans in the place of red clove His mixture for one year's pasture is ten pound of white clover, ten pounds of trefoil, fou pounds of rib-grass, four pounds of parsley and a quarter of a peck of rye-grass pe acre.

"Mr. Snowden, of Marr, who has occupie his farm fifteen years, has also practised course of cropping somewhat similar to tha followed by Mr. Newham; but whilst the latte drills all his corn, Mr. Snowden sows a portion broad cast,—drills some, and occasionally dibble both wheat and beans. He sows swedes twenty two inches apart, allowing nine carts of wel rotten farm-yard manure per acre for the rows on which he also drills ten bushels of bones six bushels of pigeon manure, eight gallons o whale-blubber, and ten bushels of ashes, al mixed together. Estimating the farm manur at ten shillings a cart, the cost of manure, pe acre, for the swedes is about £6. More tha half this crop is carted to the farm-yard, fo cattle, and not many are eaten on the grass land. The white turnips have twenty-fou bushels of bones, and ten bushels of ashe drilled, with two pounds of seed; these turnip are seldom drawn. Mr. Snowden prefers th lime from Knottingley, as much more effica cious than that on his own farm which is chiefl on a lime-stone. He purchases manure, to considerable extent, from Doncaster. Rape-dus nitrate of soda, guano, have all been used; bu bones and whale-blubber seem to him the mos valuable. He is trying the effect of schistu this year upon turnips; but the result is no yet known. The draught-horses are fed upo tares and sainfoin in the folds during the day and a considerable quantity of linseed-cake i given to his cattle in the winter.

"Mr. Crowshaw, of Byram. This farm ha been in the occupation of the late Sir Joh Ramsden for many years, under the very jud cious management of Mr. Crowshaw, thoug he has only been the tenant for the three la years. The soil is light, not naturally good, moory sand, and much crowded with timbe but the arable lands have all been effectual under-drained. The course of cropping is tu nips, barley, seeds, manured and then pasture oats, wheat. Much attention is requisite to keep the land clean for wheat, after oats, on this soil; but the purchase of manures, and careful cultivation, seem hitherto fully to have effected it. Two quarters of rape-dust, per acre, are drilled with the seed wheat. The crops were great in every field, and the land remarkably free from weeds. The practical management appeared to us to be of the very first class.

"On some grass-land, of very inferior quality, six quarters of bones mixed with three quarters of ashes, had been sown upon one acre in September, 1836. The effect was striking; a sheet of white clover, and valuable grasses, closely eaten, had displaced the coarse benty covering, which the remainder of the field exhibited.

"On the 3rd of June last, in a tolerably good grass-field, an experiment was tried with guano, at the rate of 4 cwt. per acre mixed with three quarters of charcoal ashes; the growth of grass, during the month that had elapsed, appeared to us to be more than doubled. Nearly adjoining this, a plot was staked out, on which bean-meal, at the ratio of 8 cwt. per acre, had been sown, but without ashes. The flush of grass seemed to be about one-half of that excited by the guano. Grass-land, if properly drained, is always grateful for whatever manure may be given to it. Mr. Crowshaw's farm was a gratifying sight; the land very clean, and the crops very heavy.

"Mr. H. Skelton, of Bramley Grange, holds in his own occupation, a farm of 203 acres, situate on Winmoor, five miles north from Leeds. This land is of a totally different nature from any which we had previously inspected. Naturally a cold, wet, strong clay, lightened only in some parts by a small mixture of moor incumbent on sand-stone. Though very high, it is yet inconveniently flat for draining. The whole has, however, been effectually drained to the depth of twenty-four inches, and shews the vast advantages which result from the adoption of that process upon tenacious clay soils. Mr. Skelton has not pursued any of those regular courses of cultivation that are usually adopted. His system has been regulated with a view of taking the largest possible produce of hay and straw to Leeds market, and carting back manure. For the latter article, he has depended upon purchase, not upon production by animals,—his land not being suitable for turnips. His extent of pasture on seeds, is very small; the great object in sowing them is, to raise more hay. Such a course could only be pursued in the vicinity of a large town; but it has been done in this instance with good effect, and in an admirable manner. No *expense has been* spared, and *yet nothing has been expended* but with a view to ultimate profit, and the best means have been adopted to secure that profit. Originally this farm was a poor barren waste, of similar nature to the adjoining lands; but by proper enclosures, by planting, and careful management of fences, the cutting of drains, tapering down the adjacent lands to the bottom of them, where practicable, and thereby obtaining materials to raise the more distant hollow places, with which such land frequently abounds, he has been enabled to lay the whole dry; and by the judicious management of vast quantities of manure and composts, it may be almost said,—he has made the whole rich. The adjoining lands are of a similar soil; but do not yield one-fourth of the value in produce.

"We desire the Council to understand, that, in this Report, *we make no classification* beyond that which we shew, by awarding the sweepstakes and prize to Mr. T. C. Johnson, of Chevit, a tenant farmer, and the returned stake to Godfrey Wentworth, Esq., of Woolley Park. With these exceptions, we have reported upon the farms in the order of route on which we inspected them. We repeat, however, that every farm is cultivated with very superior skill and judgment;—that the main object of each individual appeared to us to be, what a farmer's object ought to be,—raising the largest possible produce with the greatest profit. We have taken all due pains in the inspection, which fully occupied four days, and in making the award, we have exercised our most careful and deliberate judgment.

"In closing our Report, we may, perhaps be permitted to remark, that valuable as large Agricultural Meetings for the exibition of stock and implements are, on account of the opportunities which they afford for obtaining a knowledge of the excellences to be aimed at by the breeder and the grazier; and the improvement of machinery, which these exhibitions have mainly encouraged, yet the minute inspection of well-cultivated farms, is not less worthy the attention of the arable farmer. We are of opinion, that the produce of grain would be much more than doubled, and that the profit of the cultivators would be greatly increased, if the praise-worthy examples set on the farms we inspected, were generally followed. An enquiring mind is necessary to form a perfect, or even a successful, farmer. The best informed farmer would, on each of these seven farms, discern that he had something yet to learn, and would see some practice from which to improve his own. We have received both pleasure and advantage from the trust with which you honoured us. We have long been proud of our short horned cattle, Leicester sheep, our horses, and even of our pigs; and assuredly we do not feel less gratification in being able to state, that on seven farms, within so small a space, cultivation was pursued with such superior enterprise and skill.

"Charles Howard,
"William Pick,
"Robert Brough."

Reviews, &c.

Productive Farming; or, a familiar digest of the recent discoveries of Liebeg, Davy, and other celebrated writers on Vegetable Chemistry; showing how the results of English tillage might be greatly augmented. By J. A. Smith. London: Simpkin, Marshall, and Co. Edinburgh: William Tate.

We have at length an opportunity of examining and reporting upon this work. Although but a compilation professedly, it is really and in truth such an exposition of the Philosophy of Agriculture, if we may be allowed the term, as will bring home to every farmer, who at all reflects upon the subject, the true value of scientific attainments in the prosecution of his objects, whether those objects be the growth of grain or the breeding and feeding of animals; for as our author in the 3rd chapter maintains, with so much truth, "The elementary materials and many of the proximate principles of animal and vegetable matter are precisely identical."

Of course, we are not to be supposed in a general commendation to admit as granted every proposition of our author, many of which are doubted by the most competent authorities; and it is no derogation from the general merits of the work to observe that there are particular theories advanced with much plausibility which are not universally admitted—nay, more which are positively denied. We are not of those who would cavil at all which theory teaches and which practice does not sanction. We are disposed to give all reasonable suppositions fair play: but there is a point beyond which we cannot allow our faith to carry us, and we are free, therefore, to conf that the great German Physiologist d not always satisfy us. However, sin chemistry has aided, and will further ass so considerably in the search after agric tural truth, it were mere wantonness us to fling doubts over subjects which aft all none but those who have devoted mu attention to the subject can, in any degre resolve.

The work before us is, as all such wor should be, got up in a cheap form, and li the "*Muck Manual*," may be extract from pretty much at random: its style simple and unpretending, another quali cation in the eyes of the general agricult ral reader.

Take the following "*On Green Crops*" an example:—

> "Land, when not employed in raising fo for animals or man, should, at least, be appli to the purpose of raising manure for itself; a this, *to a certain extent*, may be effected means of GREEN CROPS, which, by their decom position, not only add to the amount of veget ble mould contained in the soil, but *supply t alkalies that would be found in their ashes.* Th the soil should become richer by this burial of crop, than it was before the seed of that cr was sown, will be understood, by recollecti that *three-fourths* of the whole organic matt we bury *has been derived from the air:* that this process of ploughing in, the vegetab matter is more equally diffused through t whole soil, and therefore more easily and rapid decomposed; and that by its gradual decomp sition, ammonia and nitric acid are certain generated though not so largely as when anim matters are employed. He who neglects t green sods, and crops of weeds that flourish his hedgerows and ditches, overlooks an impor ant natural means of wealth. Left to them selves, they ripen their seeds, exhausting t soil, and sowing them annually in his fields collected in compost heaps, they add materiall to his yearly crops of corn. We have said th absolute repose of the soil is not frequentl needed; and, with some practical illustratio of the system of alternate cropping, we wi close this section.
>
> "In Flanders, two crops of clover are cu and the third is ploughed in. In Sussex, turni seed has been sown at the end of harvest, an after two months, again ploughed in with gre benefit to the land. So turnip leaves and pota

tops decay rapidly, and are more enriching when buried in the green state. In the Earl of Leicester's course of cropping, the land is never idle. The turnip is the first in the order of succession. This crop is manured with recent dung, which immediately affords sufficient matter for its nourishment; the heat produced in its decomposition assisting in the extrication of ammonia, the liberation of nitrogen, and the consequent germination of the seed, and growth of the plant. Next after turnips, barley, with grass seeds, is sown; and the land having been little exhausted by the previous crop of turnips, affords the soluble parts of the decomposing tops and manure to the barley. The barley is gathered; the grasses, rye-grass and clover, remain, which derive a small part only of their organized matter from the soil, and probably consume the *gypsum* which would be useless to previous and succeeding crops. These grasses, by their large system of leaves, absorb mainly their nutriment from the atmosphere; and, when PLOUGHED IN *at the end of two years*, their decomposed roots and leaves are useful to the *wheat crop*, which is next, and last in succession. At this period of the course, the woody fibre of the farm-yard manure, containing phosphate of lime, is sufficiently decomposed; and as soon as the *most exhausting* crop is taken off the land, recent animal manure is again applied. Pease and beans, in all instances, seem well adapted to prepare the ground for wheat; and in some parts of the country they are raised, alternately with wheat, for years together. Mr. Gregg,--whose ingenious system of cultivation has been published by the Board of Agriculture, and who adopts, upon strong clays, a plan similar to that of the Earl of Leicester, (better known as Mr. Coke of Holkham,)—suffers the ground, after barley, to remain at rest for two years in grass; sows pease and beans on the leys; ploughs in the pea or bean stubble for wheat; and, in some instances, follows his wheat crops by a course of winter tares and winter barley, which is eaten off in the spring, before the land is sown for turnips.

"It is a great advantage, in the *convertible* system of cultivation, that the whole of the manure is employed, as well as the entire resources of the land, in their proper order; those materials which are not fitted for one crop, remaining as nutriment, or essential requisites for the next, or for another."

The following "*On the action of Manures*" is also very much to the point, and very full of truth:—

"One practical farmer applies, indiscriminately, any fertilizing material to his land in any state; another, more partial to what is technically termed "short muck," allows violent fermentation to reduce his mixture of straw and dung to one-half its weight,—during which operation much gaseous ammonia is disengaged and lost, which, if retained, or supplied to the soil, would have proved extremely serviceable. Both methods cannot be right in all cases.

"Besides the dissipation of gaseous matter when fermentation is pushed to the extreme, there is another disadvantage in the loss of *heat*, which, if excited in the soil instead of the dung-hill, is useful in promoting the springing of the seed and in assisting the plant in the first stage of its growth, when it is most feeble and most liable to disease: and the decomposition of manure in the soil must be particularly favourable to the wheat crop, in preserving a genial temperature beneath the surface late in autumn and during winter. These views are in accordance with a well-known principle in chemistry—that, in all cases of decomposition, substances combine much more readily at the moment of their disengagement than after they have been some time perfectly formed and set at liberty. And in fermentation beneath the soil, the fluid matter produced is applied instantly, even whilst it is warm, to the young organs of the rising plant; and, consequently, is more likely to be efficient, than in manure that has gone through the process, and of which all the principles have entered into new combinations.

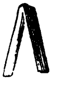
"It is certainly a matter of indifference whether we employ excrements, ashes, or bones, in carrying out the principle of restoring to the soil those substances which have been taken from it by the previous crop. But, unless we know accurately what *are* those matters that have been actually removed, how is it possible to supply, otherwise than at random guess, the deficiency? Fermented dung may be really useful, if *no nitrogen* be demanded. A time will come when fields will be manured with saline solutions, with the ashes of burnt straw, or with salts of phosphoric acid prepared in chemical manufactories, with as much certainty as now, in medicine, iodine cures the Derbyshire neck, or as quinine is substituted for the bulky powdered bark in fever. The same mixed mass of materials may be useful in one state, less so in another and under other circumstances. A knowledge of the actual wants of the land, and of the exact composition of the proposed manure, is obviously necessary to enable the farmer to adapt the one to the other as a requisite and fitting remedy. If our object be the development of the *seeds* of plants, we know they contain nitrogen. Our manure then must be rich in this material. If by fermentation ammonia be formed in the manure, if it become dry, rotten, and nearly devoid of smell, having lost its previous heat; although it may cut better with the spade, we may be sure it has lost its nitrogen, and, consequently, as far as our object is concerned, (the nutriment of the *seed*,) nearly lost its utility. The leaves, which by their action on the air nourish the stem and woody fibre; the roots, from which the leaves are formed; in short, every part of the structure of a plant contains nitrogen in small and varying proportions. But the *seeds* are always *rich* in nitrogen."

We cannot, in conclusion, do better than recommend Mr. Smith's little book to our readers. Its practical truths will be obvious to all, and many will derive advantage from even its doubtful theories.

Journal of the Royal Agricultural Society of England. Vol. IV, Part 2. London: J. Murray. *(Second notice.)*

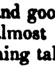
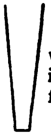
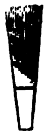
On the point alluded to in the concluding sentence of our last extract, viz., "*How far your land will draw from the drains,*" Mr. Arkell writes:—

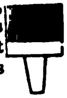
"As you cannot fix a rule for both depth and frequency to suit all soils, I should say that, with few exceptions, the depth should be 30 inches, and from 22 to 5½ yards' distance; a few instances wider, but few requiring them so near as 5½ yards. I drained a piece of poor wet clay-land, which I was told would not draw a yard; but I found the drains act at 7 or 8 yards' interval, or 4 yards on each side of the drain. Though deeper draining would require fewer drains, it is not always advisable to cut deeper, as sometimes it is very difficult to get a proper outlet for the water, without extra depth of ditches, which cannot always be obtained.

"*The Materials* I have used are tiles, stone, and clay. For land having little fall, hollow drains are best, because there is a better passage for the water; therefore on such land tiles are best, and on clay-soils there should always be some flats put under them; some tiles are made with feet, thus, ∩; but that I should not trust to on clay-land, and on rubble or gravel it is unnecessary. Besides, flats or chips of slate, about the size of one's hand, for the ends of both tiles to rest on, leave the tile hollow from the ground, which will allow the water to enter better than if it rests on the clay, in which, even if the tile does not sink deep, it will in time become firmly imbedded, and the entrance of the water be thereby retarded; for this reason, I should say, such pieces are better than flats of the same length with the tiles, excepting on running sand or very soft ground. Stone drains are various; the most common here are wall and dribble, or rubble, the former as main, the latter as tributary. Perhaps there is none so good as a wall-drain, but the expense is too great for extensive use. The dribble is made with stones, broken about the size of which they are used for roads, the drain about 8 inches wide, filled a foot high with the stones, and a little straw put on them to keep the dirt out until it is settled down; such drains answer a good purpose where there is a fair fall, say from 1 in 20 to 1 in 60, and put in properly; that is, the stones clean, and at the depth of full 30 inches, as the deeper they are put in the less likely they will be to choke from the entrance of the soil. There is another description of stone drain I have seen, which is very good, but it must be naturally confined to certain districts on account of the description of stone required, which is a thin, slaty rock; the stones 1 or 2 inches thick; one stone is placed upright against the side of the drain, and another leant against it, thus,  and a few small stones filled in over them, thereby forming a hollow drain at little expense, a waggon-load doing a chain in length.

"Clay-draining is a very good kind of draining, if done on the proper description of soils, and very much to be recommended on account of its cheapness and durability, although I am aware I may meet with opposition to this opinion. I have known it partially in use about twenty years, but within the last eight or ten it has made considerable progress in the districts I am acquainted with. It was first used on pasture, which perhaps it is most suitable for; but it has answered the purpose on arable land; it also shows the way in which drains act more clearly than most others, namely, that the water enters them at bottom, not at top, as is erroneously supposed by some. I think it was first tried by a celebrated mole-drainer, whose name I forget, who no doubt found the difficulty of getting mole-drains to stand any length of time, on account of portions failing and spoiling the remainder.

"Wood has been in use for draining a great number of years, and is still in use to a certain extent; but, except on bogs, or soft ground, it cannot be used to so good purpose as stone or tile; for after it has been in some few years, it is liable to choke up when the wood is rotten, although some may stand a number of years, as I have heard persons say who have dug across wood-drains that have been made upwards of fifty years, still good, though with no remains of wood left; and what is that more than a clay-drain?

"I have known the mole-plough used, but it cannot be depended upon; some drains of this kind will stand good for a time, while others will choke up almost directly. In mole draining there is nothing taken out; the soil being only pressed aside, no doubt soon expands again, and for this reason they soon close. Peat I have never seen used, but, if it will not rot underground, it would answer the purpose on arable land, as turf does on pasture in making turf-drains. Turf-draining is somewhat similar to clay-draining, only instead of filling the drain with the clay that is taken out, a piece of turf cut thus,  is well rammed into a drain cut thus  which has the following appearance when finished— 

If the turf be of the nature of clay, not of mould, or with too much vegetable matter in it (if it has, it will be likely to rot and fall in,) it will last a long time; but I consider clay better than turf, as there is nothing in it to rot. I have seen turf used in a different way, by putting the grass-side of the whole turf downwards, not ramming it at all, thus,  but I consider that a very bad way, as the turf will soon fall in. I have put stone on instead of the turf, and it has answered very well."

He then goes into an account of clay or plug-draining, which he very minutely describes, and of which he is apparently very much enamoured. We cannot follow through all this, we will go on therefore to—

"*Filling Drains.*—Where I have used tiles, which I have done on soils varying from a very porous subsoil to a very strong clay, I have always filled them in with earth just as it was taken out, merely treading it in to make the drain hold it; the only soil for which I should take the trouble to procure any other material would be on running sands; a fine running or quicksand, I have understood (as I have never had any such,) is the most difficult land to drain of any, as they soon choke up; if flats the whole length of the tiles, and a little clay soil trod rather firmly round them, would not prevent it, I would put a little under them, to prevent the sand from rising; if drains are made 30 inches deep and as narrow as possible, so that a man can work, there will be no necessity for that great and unnecessary expense of drawing stones or porous earth to place upon the tiles; but if put in only from 12 to 18 inches on clay soils, then stones, brushwood, &c., are necessary to make it appear something the better for the trouble. I cannot speak too positively on the necessity of making deep drains in tenacious soils, at least 30 inches, not but deep drains are best on all, yet an 18 inch cut may drain a porous soil tolerably well, but on a clay it will not drain far; a person told me he had some tiles taken up that were put in about 16 or 18 inches deep with the soil as firm round them as if it had been rammed in: now into such a drain as that the water has considerably more difficulty to pass than into a clay drain, because in the latter it can pass in through the sides and bottom below the arch; but if the soil be kneaded so firmly round the tiles as to be impervious to water, it can only enter at bottom, and then naturally very slowly, as, the drains being so shallow, there is little weight of water to force it in; but if they are made as above advised, the horses will never tread it so firm as it was before it was moved; for in cutting across old drains of that depth you always find the moved soil more hollow than the remainder.

"With regard to rubble draining, what little I have done I have filled in about 12 inches deep with stones, putting a little stubble or rough grass to prevent the dirt falling among the stones, then filling in the soil, treading it tolerably firm. Perhaps in filling drains with the same soil that has been taken out on tenacious clays, through which the water naturally percolates slowly, you may, after very hasty rains or rapid thaws, find the water lie on the surface for a short time. This may be the reason for which persons fill them with stones or porous earth to admit the water, but I consider the remedy worse than the disease, as such hasty rains being admitted so fast would be more likely to wash the soil in and fill them up than the mere swill of the drain itself; besides, suppose the water do lie on the land a few hours after such weather once or twice in the course of the winter, there is no damage done; it is not land being wet in wet weather that injures it, but a continued sodden state when it ought to be dry: how soon a few dry cold days will tell on such land in the spring of the year!

"The expense is the great bar to this necessary improvement, especially where the owners will neither assist themselves nor let for a term, so that the tenant may reap the benefit of an outlay by himself; all the eloquence that all the speakers of this country possess will not persuade farmers under such circumstances to expend from £2 to £5 per acre in improving their land, nor is it likely, when they so often see persons turned out of their farms through the mere caprice of the landlord or steward, often through the dishonesty of the latter; you cannot call it any milder term, as you often see it is those that have made greatest improvements on their farms. But to the point: the expense per acre must be variable, therefore it will be best to give the cost per chain of 22 yards. I will first compare tiles with stones as they have each cost myself: I could dig stone on the farm, but I preferred making tiles, as I could not buy them under 40s. or 45s. per 1000; I have reckoned them at 30s. for small and 40s. for mains; I made them 13 inches, but they will not stand more than 11 inches after burning; a chain will require 72, say 75, as there is always a little waste; they will be 2s. 3d. hauling one-third of a mile; 4d. making the drain, putting in and filling up from 1s. to 1s. 4d., an average of 1s. 2d., which makes a total of 3s 9d. per chain; dribble or rubble cost as follows:—digging stones per yard 1s.; breaking ditto 4d.; the drain filled a foot deep and 8 inches wide, will take 1½ yard of stone per chain; filling and hauling 1½ yard of stone ¼ a mile, 1s. 6d.; expense of making drain, putting stones in, and filling up, 2s., which is 5s. 6d. per chain; or with tiles 7⅓ yards apart, 30 chain at 3s. 9d., £5 12s. 6d. per acre; with stones the same distance apart, £8 5s., a very considerable difference, and more than I had an idea of, for I never made a minute calculation before, as I only made between 20 and 30 chain of stone, which quite satisfied me I should not be able to drain the farm and keep other work up in any reasonable time without tiles; perhaps stones could be dug cheaper in some places than here, as they are here very rubbly and dirty, requiring a great deal of trouble to get them clean and fit to put in. I have compared this sort of stone-draining with tiles, because it is the one most generally in use in this as well as other districts, and by some thought preferable, but I consider tiles best.

"Wall-drains are too expensive, except for mains, and for these, tiles are much cheaper. There was a considerable length of it done on my farm about 30 years back, which I am told cost 2s. 6d. per pole, or 10s. per chain; now contrast any of the above prices with that of clay-draining, which costs from 11d. to 1s. 4d. per chain, an average of 1s. according to the present price of labour, which will drain an acre for 30s., which is less by one-third than the expense of hauling tiles and putting them in, and drain 5 acres at less expense than one with stone. I have never seen a draining-plough for cutting out drains, but if it is applicable to any kind, it must be equally so for clay, to take the two top draws or cuts of soil out, but I think the tool above described must be used for the bottom slice, as that requires to be cut true to fit the blocks; but if the plough could be used to advantage I should not be surprised if some clay soils could be drained for £1 per acre. Turf-drains are about the same expense as clay-drains."

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An Essay on Artificial and other Manures, to which a premium was awarded by Sir Chas. Lemon, Bart., M.P., through the Cornwall Agricultural Association, and read at the Annual Meeting of the Society in December, 1843. By W. F. Karkeek. Truro: E. Heard. London: Longman, Brown, Green, and Longmans.

We have great pleasure in calling the attention of our readers to this paper; and in the name of the farmers of Britain we again and again thank Mr. Karkeek for the patience he has bestowed upon his subject, and the care with which he has selected the numerous experiments he has laid before us.

Mr. K. must excuse our lengthened extract, if extract will indeed serve to convey to our readers the value of his essay, if not, we must be content to plead guilty at once to the charge of piracy, and the inconsistency of *extracting* the whole. Commencing then with the introduction of bone dust into Cornwall, in the year 1835, our author proceeds as follows:—

"Its value as a fertilizer is now acknowledged by most farmers, and its introduction into Cornwall may be regarded as one of the most important and successful agricultural efforts in modern days; as it has been, certainly, one great means of increasing the production of sheep, cattle, and corn, and thereby adding to the national resources required for an annually enlarging population.

"The first experiments which fell under my notice on the effect of bone dust were some that were instituted as early as the year 1835, by Mr. Trethewy, of Trewithen, on Carnwinick farm, in Probus, the property of C. H. T. Hawkins, Esq., adjoining Trelyon Common, in St. Stephens parish. At this period it was a barren waste, heath and furze being the only covering of the soil, and had been previously let at two shillings per acre. The estate has a north-west aspect, and lies on a clay-slate soil, of a loamy character.

"This first experiment shows in a most striking manner the advantage of bone dust as a fertilizer, and its permanent effect on the land afterwards for eight years. "A field of several "acres was broken from the Common, the largest portion of which was manured with bone "dust, at the rate of 3 quarters to the acre—the "other portion of the field was merely dressed "with the ashes obtained from the breaking and "burning of the land. The turnip crop was "completely carried off by the fly. In the years "1836 and 1837 it was cropped with oats, and "then laid down to permanent pasture up to the "present time. There was more than double "the quantity of oats on that portion where the "bones had been applied, and at this period its "effect can be plainly distinguished, as if a line "of demarcation had been drawn between rich "and scanty herbage, or between a green meadow and an uncultivated soil."

"The effect of the bone dust in this experiment is extremely satisfactory, inasmuch as it proves that its fertilizing principle is a permanent one; and, in my opinion, completely sets at rest the question which is frequently agitated amongst farmers, as to whether the manuring property of bone exists in the animal matters, which constitute about one-third of its substance, or in the earthy matters, constituting the remaining two-thirds, since it is almost impossible to suppose that any other than the earthy matters could have remained so long in the soil,—the animal matters being probably decomposed in the first and second crops. The second experiment confirms the previous one.

"In 1836, another piece of the 'waste' was "broken which was sown to oats, and on the "following year a similar crop was taken. One "portion of the field was manured with bone "dust only. The oats on this part was equal "to the first experiment. After this, the whole "was laid down to pasture, and at the present "period, the line of distinction can be plainly "seen where the bones were applied, at more "than four miles distance."

"The same beneficial effect is also plainly seen in two large patches, broken in 1837 and 1838. They have been sown with turnips and manured with bone dust only, which produced most excellent crops; after which a crop of oats was taken, and then pastured up to the present period. And in another piece of about six acres, which was broken in 1839, and sown with Swede turnips, an excellent crop was produced; since which, other crops have been taken, and the clover at the present time is very luxuriant, being equal to land let at 40s. per acre.

"In 1840, another piece was broken and sown to turnips, with bone as before, and oats in the following year; both crops were excellent. In November, 1841, it was ploughed *once* only, and without any other cultivation sown to turnips in June, 1842. This crop was also good and plainly proved that turnips after grain may be produced without either spring or summer ploughing. In 1841, another large portion was broken, sown with Swedes and afterwards cropped with oats, using the bone manure only, which answered as well as before.

"From the year 1835 to the present period, Mr. Trethewy has thus successfully broken and cultivated patches of waste to the extent of 60 acres. His usual method of cropping is, first, turnips,—then oats,—seeds, and permanent pasture. I witnessed a crop of Swedes there last year, which were decidedly the finest crop grown of the kind in the parish of Probus for the season.

"I will next direct your attention to some valuable experiments instituted by Messrs. S. and R. Davey, of Redruth, in enclosing a portion of the "waste" of St. Agnes common; which prove to a demonstration, that most of our barren heath has dormant energies within it, and only requires skill, enterprise, and a small outlay, to bring the whole of these "improvable wastes" into profitable cultivation.

"The soil is of an argillaceous character, consisting chiefly of silex, alumina, and a trace of oxide of iron; in many places it has a deep retentive clay subsoil. The farm, called Tywarnhayle, has a south-east aspect, being protected from the sea winds by St. Agnes Beacon and other neighbouring hills. It is almost impossible to find a more barren spot than this part of the common exhibited, previous to its being enclosed; there being scarcely turf enough left to make the hedges, and the greater part being chiefly subsoil. In the following table, you have the method of cropping and manuring which the Messrs. Davey adopted in their first experiment, and the results:—

A. a. r. p. 6 3 12 statute	When sown.	Manures per acre.	Produce per acre.	2nd sowing.	Manures per acre.	Produce per acre.	3rd sowing.	Manures per acre.	Prode. ⅌acre	Seeds&manr.	Present appearance.
Broken in 1839.	Wheat in Autumn.	3 qrs. of bone. ¼ acre had 30 bus lime.	Fit only for Pigs and fowl	Oats in 1841.	Nitrate of soda 1 cwt.	36 bus. imp of oats per acre	Barley in 1842.	Truro town dung, £9 per acre including carriage&c	18 bus. per acre.	Seed, 2 cwt. guano	Very superior grass.

"It will be seen from this experiment, that the soil was not sufficiently powerful to produce a crop of wheat, manured over with bone dust, 3 quarters to the acre. In the oat crop, the following year, manured with 1 cwt. of nitrate of soda, we have 36 bushels of oats and no seeds, in consequence of which the field was tilled to barley in 1842, and dressed with Truro dung (scavengers' dung,) at a cost of £9 per acre, including carriage. Here we have another failure, the produce being only 18 imperial bushels per acre. The seeds in the early part of the spring of 1843, made but little progress, in consequence of which it was dressed with 2 cwt. of guano per acre, and its growth shortly after this was surprising. So abundant was the grass during the summer, that it was a wonder to the neighbourhood how so much stock could have been kept for such a length of time. Where the lime had been employed for wheat, the grass was not nearly so thick as on the other parts:—

B. a. r p. 4 0 2 statute	1st cr. when sown	Manures used per acre.	Produce ⅌ acre.	Second crop When sown.	Manures used per acre.		Produce from guano per acre.	Ditto dung and compost.	Seeds.	Manures.	Present appearance.
Broken in 1840.	Wheat in Nov.	Bone dust, 3 quarters.	None.	Oats in 1842.	2 cwt guano.	10 loads compost, dung, earth, &c.	77 bushels white oats.	29 bushels black oats.	1843.	2 cwt guano	Very superior.

"In this second experiment, it will be seen that the wheat failed as in the first, evidently shewing that wheat was not adapted to the new soil, whilst in the following year we have a beautiful illustration of the effect of guano on a crop of oats, producing 77 bushels per acre. The Messrs. Davey had now learned by experience that the method of cropping and manuring which they commenced with was not such as would be likely to prove successful, and accordingly, in the following experiment, they began cultivating the next piece of "waste" by taking a green crop first, followed by a crop of oats:—

C.	when sown 1st crop.	Four separate acres manured each with				2nd crop.	manr ⅌ acr	prod. ⅌ acr	Seeds.	prt apprnc.
Stat. a.r p. 4 1 0 brkn. 1841.	Turnips in June.	Dung 25 load.	Sea weed	1T. of horn, &c.	Bone dust, 4 qrs	Oats in 1842.	2 cwt. Guano.	72 bush bl. oats	1843, 15 loads farm yrd dung	Very superior.
		Produce.								
		Past. 15 T.	none.	none.	Swed. 18ton.					

"In this experiment, the first thing worthy of attention is the trial between bone dust and Truro dung, the result shewing a profit in favour of the bone dust, and a loss of £5 15s. on the dung; the horn, &c., (being the sweepings of a button and comb manufactory, consisting of filings of bone and horn and ivory,) and the sea weed, producing no effect whatever. Th ence per acre in the expenses in this trial bone and dung may be estimated as foll

DUNG.			BONES.
25 loads dung, at 5s.	£6	5	4 qrs. bones, at 2
Carriage of do. at 4s per load..........	5	0	Carriage of ditto.
Spreading of dung on the land..........	0	10	
	£11	15	

Value of Manure.	Produce.	Value per ton.	Value of Produce.	Diffe ence b twee crop a manu
			£. s. d.	£. s.
Dung, £11.15s.	15 tons pasture.	6s.	4 10 0	7 5
Bone, £4. 16s.	18 tons Swedes.	8s.	7 4 0	2 6

"Again, in the second crop we have as 72 bushels *of oats* produced by 2 guano per acre. Where the horn a sweepings had been used previously for the oats and seeds were decidedly the be of the field,—bone next,—dung next, weed the worst part of the piece. Wl horn had been employed, the land has present time, a far better appearance t fields in the neighbourhood. These thr A. B. C., kept 30 ewes, 30 lambs, 4 horses, and 30 pigs, from the comme of May until the harvest. The grass and carried into the stable for the horse which the field has been well stocked wi

"The next experiment was on a simi of "waste" adjoining the former ones.

D. statute a. r. p. 4 0 25	1st crop sown	Manure per acre.	Produce per acre.	2nd crop sown.	Manure per acre.	Produce per acre.	
Broken in 1842.	Swedes in July.	4 qrs. bone dust and 1 cwt. guano.	20 tons Swedes.	Barley in 1843.	10 cwt. of hoofs of* animals and 1 cwt. Guano.	12 imperial bushels only.	T b ch

* Cost at the farm £10 per ton.

"The circumstance most worthy here, is the powerful effect produced hoofs of animals, in conjunction with g the oats and rye-grass; the latter gr such an astonishing degree, that it co choked the clover and very nearly the The field has now the appearance o coarse pasture. We also see the effect and bone dust mixed, in an excellent Swedes, 20 tons to the acre.

"We have in the following experiment, a similar effect produced by a mixture of bone and guano manures on Swedes, and in the following year another excellent crop of oats with only 2 cwt. of guano per acre:—

E. Statute a. r. p. 8 2 37	1st crop sown 1842.	Manures per acre.	Produce per acre.	2nd sowing 1843.	Manure per acre.	Produce per acre.	Present appearance.
Broken from the Common 1842.	Turnips and Swedes sown late.	4 qrs. bone, 1 cwt. Guano.	18 tons.	Oats.	2 cwt. Guano.	60 bushels per acre.	Very superior.

"Experiments like these carry with them their own reward; they are indeed twice blessed, "they bless him that gives, and him that takes." The greatest conquests consists in changing and improving the surface of the earth, so as to secure for the good of man, a proportionate increase of its productive powers; and in warring with sterility, we are changing the solid rock and the naked heath, into green meadows and fertile pastures. The expense incurred in breaking and cultivating an acre of the waste is nearly paid by the two first crops—leaving the value of the straw, about 1½ ton per acre, to pay for incidental expenses.

"The expenses incurred by the Messrs. Davey in cultivating an acre of St. Agnes Common, and the value of the produce on the two first crops ONLY may be estimated as follows:—

FIRST CROP.

	£.	s.	d.
Ploughing one foot deep first time	1	10	0
Breaking down	0	10	0
Rolling and harrowing	0	10	0
Ploughing, second time	0	15	0
Breaking down, rolling, and harrowing	0	15	0
Tormenting	0	7	6
Rolling and harrowing, second time	0	7	6
Turnip seed, putting in, &c.	0	10	0
3¼ qrs. bone dust, at 23s	3	16	6
1½ guano, at 13s.	1	0	0
Enclosing	1	16	0
	£11	17	6

SECOND CROP.

	£.	s.	d.
Ploughing	0	15	0
Tormenting	0	7	6
Seed	0	12	0
Putting in and working down	0	12	0
2 cwt. guano	1	6	0
	£15	10	0

PRODUCE.	£.	s.	d.
20 tones of Swedes, at 8s. per ton	8	0	0
64 bushels of oats, at 2s. per bushel	6	8	0
	£14	8	0

"The profit arising from the feeding of stock on the seeds is not considered in this account, but an idea may be formed of their luxuriancy from the circumstance, that during the summer the Messrs. Davey received 7d. per week for the keep of fat sheep belonging to butchers, and at the present period, Christmas 1843, 6d. per week. The fields are now equal in appearance to others let at 20s. per acre in the same neighbourhood.

"It should likewise be mentioned that the expenses incurred in picking and carrying of stones from the different enclosures, was more than repaid, by the sale of the stones for repairing the turnpike roads.

"In the experiments which I have related, conducted by Mr. Trethewy and the Messrs. Davey, in bringing into cultivation the "wastes" of our county, we have clear and evident proofs of the efficacy of bone dust and guano.

"Sir Charles Lemon, in his notes on the agricultural produce of Cornwall, read before the statistical section of the British Association in 1831, states, on the evidence of Mr. Cowling, given before the Emigration committee in 1827, "that there were improvable waste lands in Cornwall to the extent of 190,000 acres." Since that period vast quantities of those "wastes" have been brought under the plough, and not a year passes in which the cultivation is not extended. The chief impediment in cultivating those tracks of waste has hitherto been the great expense required in the outlay; but now, by using these manures, it is to be hoped that, ere long, we shall see nearly all the improvable wastes of our county yielding their proportion of food to the inhabitants.

"We have also a decided proof of the superiority of bone and guano manures as fertilizers, compared with dung. The two following experiments will also show, in a very satisfactory manner, that in point of cheapness, too, there is no comparison:—

"Experiment No. 1.—A trial between bone dust and Truro scavengers' dung, by Mr. Geo. Mason, on Roseveth farm, in Kenwyn, on a crop of white turnips, calculating the price of the dung at 4s. per load—the increased consumption of bone and guano having very materially lessened the use of this article, and consequently its price.

DUNG, HALF-ACRE.

	£.	s.	d.
15 loads of dung from Truro, at 4s per load...	3	0	0
Expense of carriage 3 miles	1	17	6
Expenses of spreading the dung on the land..	0	15	0
	£5	12	6

BONE, HALF-ACRE.	£.	s.	d.
1¼ qrs. of bone dust	1	11	6
Carriage of ditto	0	1	6
Broad-casting, &c.	0	1	0
	£1	17	0

"The crop was equal, being about 20 tons to the acre; but the difference in the expense was so considerable that the farmer could have cultivated *three acres* with bone at the expense of *one* with Truro town dung. The estate is situated in a poor district, having a south-east aspect, and lies on the clay-slate; valued about 18s. per acre.

"Experiment No. 2.—Between dung, bone, and guano, as fertilizers for grass and hay, was instituted on land farmed by the Earl of Falmouth, in the present year, by Mr. Rope, his Lordship's hind, upon a piece of permanent pasture, which had not been ploughed up for fifty years. The field had alternately been mown and grazed during this period, and had received no dressing in the shape of dung, for the last ten years. The soil is of a heavy loam, resting on a clay-slate subsoil, having a northern aspect. THREE HALF-ACRES were carefully selected, measured and manured, on the 24th of March—the hay cut on the 10th of July, and weighed on the 15th. The result will be seen in the following table:—

Manures, per half acre statute	Cost of manures including carriage	Weight of new hay, per stat. acre	Value of hay at 30s. ℔ ton.	Profit.	Loss
	£. s. d.	t. c. qr.	£. s. d	£. s.	£ s d
15 loads of Plymouth dung ..	4 8 0	1 8 0	2 2 0	..	2 6 0
10 bus. bone dust	1 12 0	1 2 2	1 13 9	..	0 1 9
134lbs of guano ..	0 17 0	1 12 3	2 9 0	1 12	

"Here we have a decided loss on the part of the Plymouth dung, which consists of the sweepings of Plymouth streets, night-soil, rubbish, &c., of £2. 6s., and a decided gain on the guano of £1. 12s. per half acre. There cannot be a question after this and the other experiments which I have related, that guano is a most astonishing fertilizer; still this experiment, valuable as it is, is incomplete as it regards the bones, till we see the effect of these manures on the next year's crop, which should be grown without manure, and cut and saved in the same careful manner. The after-grass was very good on each of the pieces, the cattle preferring the part manured with bone.

"Mr. Rope tried the guano in various ways. On a piece of ground adjoining, he sowed double the former quantity per acre; and on some young clover also a similar quantity, and the rapid growth of each was extraordinary. The spots where guano was applied could be distinguished at a great distance. In
instance, he dressed half an acre of barle
which fifteen sorts of grass seeds and t
clover had been sown, and at the present
they are looking remarkably well; the
also an increase of about eight imperial
of barley per acre compared with other
the field. I mention this circumstanc
nected with the seeds, in consequence
having been stated that guano is injur
clover and young grasses."—(*To be cont*

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Quarterly Journal of Agriculture, and
sactions of the Highland and Agric
Society of Scotland. New series,
Blackwood and Sons, Edinburgl
London. (*Second notice.*)

WHILST the chemist is teaching us
appreciate truly his analytical skil
laying open to us nature's laborator
geologist pointing out the origir
formation of soils, and the botanist sh
us the importance of cultivating a
ledge of his most elegant and usefu
the entomologist is no less busy f
benefit—pointing out the origin and
of the various insect tribes which
our crops, and showing us how the
be most easily destroyed—calling our
tion to facts in reference to the scarc
abundance of our fields, of which, b
his exertions, we should know nothin
exhibiting the wonderful works
Creator in his most minute and
creations. The paper before us, b
DUNCAN, M.W.S., "*On insects most in*
to vegetables and animals, and the mea
calculated to counteract their ravages,'
of those useful expositions which a
read with advantage. Of the *Great*
underwing, an arch enemy to the
crop, Mr. Duncan observes:—

"*Triphæna Pronuba.*—The expansior
wings is upwards of two inches; the upp
brownish-grey, dark liver-coloured, o
shade intermediate between these two, ea
two kidney-shaped marks near the centre
wings orange-yellow, a narrow black ban
hinder extremity, but not reaching the
and continued along the anterior

mitting a narrow streak towards the centre of e wing; head and thorax of the same colour s the anterior wings, and the abdomen like the inder wings. The eggs are in all probability, aid in the earth; at all events the caterpillars enetrate into the soil, and pass the greater part f their lives beneath the surface. Their skin is tough and resisting, to fit them for such a mode of life; the colour brown, or dull-lived, with a slight tinge of green, and two interrupted black lines on the back. They pass the winter under the surface of the ground, and are capable of enduring a great degree of cold. Mr. Curtis states that he has known them to be embedded in a sheet of ice and yet recover. They come to the surface early in spring, and prepare to undergo their metamorphosis to a chrysalis, which takes place in April, the moth appearing early in summer. It flies only for a short distance at a time, and chiefly in the afternoon and evening. During the day it may be found lurking at the sides of stones, and among grass, and when an attempt is made to seize it, it seldom takes wing, but endeavours to escape by gliding rapidly away among the herbage. It appears to be plentiful in all parts of the country. The caterpillar seems to be a very general feeder, and destroys the roots of many kinds of useful plants. It has been known to commit extensive injury to the turnip crop by eating away the rootlets, and even penetrating into the bulb. Such methods of destroying it as have been previously recommended in the case of other root-eating grubs and caterpillars must be had recourse to."

The following history of one of the greatest enemies to orchards will be doubtless recognised by many of our readers :—

"*The Winter Moth. (Cheimatobia brumata.) Phal. Geom. brumata, Linn.*—The history of this moth, the most formidable pest to fruit-trees of all the geometrine species, has been carefully investigated by the Canon Schmidberger, from whose account several of the following particulars have been derived. It is named the winter moth on account of its appearing so late in the season, seldom before the end of November or beginning of December. The female is apterous, and frequents the stems of the trees when pairing takes place, after which she ascends to the uppermost branches to deposit, laying her eggs, one by one, either at the roots of the leaves or on the branches, sometimes on the fruit and even on the leaves. They are very numerous, often upwards of 200, of a green colour, and so small as to be detected with great difficulty. Firmly glued to the bark, and covered with a secretion which hardens over them like a coating of varnish, they not only repel the moisture, but bear without injury the cold of the severest winters. The heat of spring necessary to cause the buds to expand is just that degree of temperature requisite for hatching the eggs; and the appearance of the caterpillars and their food is thus exactly contemporaneous, and that whether the season be early or late. They are at first extremely delicate and semi-transparent, requiring but little food, and sheltering themselves alike from the cold of the night and the heat of mid-day beneath a fine web, woven within the leaves of the calyx and the opening blossom. They begin to gnaw the petals as soon as they are unfolded, and likewise perforate the leaf-buds, continuing at intervals to weave a thin web which draws the parts together and prevents their expansion. "When the blossoms begin to unfold," says Schmidberger, "some of these caterpillars hang themselves in the petals, and others descend to the receptacle to find food and shelter, while those which can get no blossoms penetrate and make their way into the centre of the unfolding leaf-buds, and take up their abode there. When the fruit is formed, it is their favourite food, and they eat it almost entirely, so that only the stalk or part of the core remains. They then return to the leaves, eating at first the more tender ones, then as their bodies become stronger, the remaining leaves, particularly when the insects are very numerous. As these caterpillars destroy their houses by their voracity, they are obliged, in order to make fresh ones, to have recourse to the withered skeletons and stalks of the leaves they have eaten. They glue these together in the shape of a ball, and seek protection from rain and cold within. There they devour the remainder of the buds, which is extremely injurious to the tree, as by doing so they completely destroy the spring shoots. These small balls or masses on the leaves and shoots give them the appearance of having been scorched: and nothing green is now to be seen on the tree. The caterpillars therefore leave it and take possession of another." The colour of the caterpillar is pale-green with faint lines on the sides.

"When they are fully matured, which is about the end of May or beginning of June, they allow themselves to drop from the tree by the aid of a silken thread, and become chrysalides in the earth. The moths are not all disclosed during the same season, such as were late in becoming pupæ, continuing throughout the winter in that state, and appearing in spring. The upper wings of the male expand somewhat more than an inch, and are of an ashy-brown colour, with various indistinct darker waved streaks, forming in the middle a faint transverse band; the hinder margin with a series of dusky spots at the base of the fringe; hinder wings pale, with faint dusky bars, which are occasionally obsolete. The body is very slender and delicate, of a yellowish-grey colour. That of the female is considerably more robust, and ash-gray, the wings rudimentary—that is to say, only a portion of the base existing, which is of the same colour of the body, and crossed about the middle by a dusky streak; feet long.

"The natural enemies of the caterpillars of these moths are very numerous, and it is, no doubt, owing to their operations that our orchards in general suffer less than might be expected. About the time the caterpillars appear, most of the small birds have families of young to support, and to these the *green loopers* afford a favourite morsel. Titmice especially search for them with great assiduity, and destroy them in multitudes. The chrysalides are seldom deeply embedded in the soil, and are not unfrequently merely covered with a clod of earth; they are frequently, therefore, destroyed by long-continued wet weather and the severity of the storms of winter. Owing to the lateness of the season, also, when the moths emerge from their pupal retreat, they are frequently overtaken by frost and snow in the very act of making their escape, and being thus unable to reach the surface of the earth, necessarily perish. Parasitical insects likewise of various kinds assist in their destruction; and it is asserted that ants have been often seen hurrying down the stems of the trees, one after another, each with a caterpillar in its mouth."

"The circumstance of the female of this and the moth last noticed being destitute of wings, has suggested a method of guarding the fruit-trees against their depredations, which is well worthy of attention. It is simply to surround the stem of the tree with something which shall prevent them creeping up, the only way by which they can get access to the fruit-bearing branches. Some glutinous and tenacious substance would seem to answer this purpose best; and, of all that have been suggested, bird-lime promises to be the most efficacious. It is not speedily dried by exposure to the air, but retains its viscosity for a time without requiring to be renewed; and it is sufficiently tenacious not only to arrest the progress of the insect, but retain it altogether till it perish. A thin layer or belt round the trunk of the tree, not far from the ground, would be an effectual barrier not only against this insect in particular, but likewise against several others. In regard to wall-trees and others similarly circumstanced, it would obviously be necessary to continue the layer of bird-lime along the wall, as the moth would otherwise find ready access to the branches at *any other place, if* prevented ascending the stem. Tar, grease, and other substances of a nature, have been tried for the same pur and they are not ineffectual; but the objec to them is, that they quickly dry up, and req daily renewal. The tar, also, has been fo injurious to the tree, particularly if young it penetrates through the bark into the w and interferes with the circulation of the To remedy this evil, Schmidberger describ contrivance which he calls a boot, and which asserts has been found completely to answer end in view. It consists in surrounding base of the stem with a wooden frame or and daubing it on the outside with tar, inst of applying it directly to the stem. The fra consists of four boards about a foot high, ought to be rather longer than the diamete the tree they are to surround. These boards are to be nailed together in the form a square open box; but the fourth board is to be fastened on till the frame is placed ro the tree, as the stem must be entirely enclo by the boards. To prevent the sun or rain fr having any effect on the tar or cart-grease, top of the frame is to be surrounded wit moulding; that is, a thin piece of wood, th or four inches broad, is to be nailed on the so as to form a projection on the outside, under this an angle. This angle, formed on outside only, is to be thickly smeared with This frame is to be set an inch deep in the ea which should be well trodden in round it, that the moths may not get under it and re the tree. It should be brought into use bef the time when moths begin to ascend the tre It may be necessary to daub it two or th times at first with the tar, as the latter is pa absorbed by the wood for a time; but afterwa two or three smearings will suffice for the mainder of the autumn, and, as an addito precaution, it may be renewed in the spri Caterpillars cannot pass this *corden sanita* and it will likewise arrest the progrees of ma noxious beetles which do not use their win If this boot, or a layer of bird-lime, be resorted to, nothing remains but to uncaterpil the tree in the usual way, after the ravages the caterpillars begin to appear, and when considerable portion of the mischief has b already committed."

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New Books.—An Essay on the distribut of Wealth and on the sources of Taxation. P 1, "Rent," by the Rev. R. Jones. Post, 8vo Whitley's application of Geology to Agricult The Hand-book of Farriery, by James Jo 18mo. Rural Scenery, or a Peep into Country, for Children, col. plates, 18mo Johnson on Manures, 2nd ed. 8vo.

MANURES.

Subjoined are the latest prices of several sorts of manure :—

Bone dust, 16s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £8. per ton. 15s. per cwt.
Guano, 10s. to 12s. per cwt., according to quantity.
Rape Dust, £6. to £6. 10s.per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 32s. 6d. per ton; landed and housed, 38s. to 42s. per ton.,
Nitrate of Soda, 15s. 0d. (duty pd.) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per packet, sufficient for three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 12s. per cwt.
Compost, £3. 12s. 6d. per hhd. sufficient for three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphur for Destroying Worm on Turnips, 16s. per cwt.
Sulphate Soda, 7s. 6d. per cwt.
Chloride Lime, 28s. per cwt.
Sulphuric Acid, 2½d. per ℔.

The Markets.

The market for WHEAT *has lost some portion of its late activity. Prices are generally quoted a shade lower than they were, and an unwillingness, on the part of the trade, to buy has been manifested, evidently arising from a fear that on the opening of the northern spring trade, supplies may turn out more abundant than has been hitherto calculated upon. There are however, other corn-purchasing states besides our own at this moment seeking supplies. Naples has thrown open her ports for the free-admission of foreign grain, and considerable quantities are said to have arrived.*

BARLEY *has partaken of the same dullness in the markets of most of the counties where it is grown, although holders do not press it forward.*

OATS *are a shade dearer.*

BEANS *and* PEAS *are in moderate demand, at the prices quoted.*

BEEF *and* MUTTON *were both held at a less figure in London on Monday last, chiefly in consequence of an overstocked market: prices, however, have not yet reached the mark of last year.*

FOOD ROOTS *are in demand, and better prices obtained.*

HOPS *are quoted as follows :—*

Kent Pockets	£7	0	to	£9	0
Sussex Pockets......	6	2	„	6	10
Worcester	6	6	„	6	*10*

LONDON, Mar. 25.

		Per	Qr.
WHEAT, Essex and Kent, new, red		56	60
White................	58	60	66
Irish................		50	54
White		52	58
RYE, old		30	36
New		36	—
BARLEY, Grinding		28	30
Malting		32	34
Chevalier............		34	36
Irish................		28	32
Bere................		26	28
MALT, Suffolk and Norfolk		60	62
Brown		56	58
Kingston and Ware		60	63
Chevalier..............		60	63
OATS, Yorksh. & Lincolnsh., feed		22	23
Potatoe................		22	25
Youghall and Cork black..		18	19
Cork, white		19	20
Dublin		18	19
Waterford, white		18	19
Black		18	19
Scotch feed		20	22
Potatoe................		23	25
Limerick................	20	21	23
Londonderry		20	21
BEANS, Tick, new		28	34
Old, small		34	38
PEAS, Grey		32	33
Maple		31	33
White		23	36
Boilers		34	38

SEED, Rape, 27*l* 28*l*. Irish, 22*l*. 26*l*. per last.
Linseed, Baltic..30 38 Odessa..41
Mustard, White...... 7 10
Brown .... 8 11 per bush.
FLOUR, Town-made — 50
Suffolk.... — 42 per sk. of 280 ℔s.
Stockton and Norfolk .... — 42

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	45	50
Hamburgh..............	42	44
Rostock	42	44
BARLEY....................	20	—
OATS, Brew	12	16
Feed	11	15
BEANS	15	19
PEAS	23	25
FLOUR, American, per barrel	21	23
Baltic	21	23

LONDON AVERAGES.

			£.	s.	d.
Wheat	6129	qrs.	2	18	1
Barley	6460		1	14	6
Oats	22041		1	0	2
Rye	114		1	13	5
Beans	1609		1	8	7
Peas	683		1	10	10

SEED MARKET.

	s.		s.
Canary, per qr.	54	to	57
Carraway, per cwt.	57	to	62
Clover, red, English	60	to	76
„ „ Foreign	54	to	73
„ white, English	100	to	130
„ „ Foreign	70	to	115
Coriander	15	to	20
Hempseed, per last	35	to	28
Linseed Cakes, Eng. p. 1000	£9 10s.	to	£10 0
„ „ Foreign, p. ton	£5	to	£6 10
Mustard, white, per bushel	10	to	12
„ superfine „	6	to	8
„ brown „	12	to	18
Rapeseed, English, per last	£25	to	26
Tares, English, spring p. bushel	4	to	5
Foreign „ „ „	3	to	5

LIVERPOOL, Mar. 26.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℘ 70lbs.	8	4	8	8
Ditto, red	8	0	8	3
Irish white, new	7	8	8	0
Ditto, red	7	6	7	8
Oats, Eng. and Scotch, ℘ 45lbs.	2	8	3	0
Welsh	2	6	2	7
Irish, new, best mealing	2	7	2	8
Barley, English, per imp. qr.	32	0	36	0
Foreign	4	3	4	8
Irish, Scotch, and Manx, per 60lbs.	4	2	4	6
Feeding	3	10	4	2
Rye, per imp. qr.	26	0	30	0
Beans, English, per imp. qr.	33	0	36	0
Irish, &c.	31	0	34	0
Foreign	33	0	35	0
Egyptian, per 480lbs.	29	6	30	0
Peas, English, per imp. qr.	36	0	40	0
Foreign	35	0	42	0
Malt, per imp. qr., fine	60	0	63	0
Flour, English, per 280lbs.	42	0	44	0
Irish, extra-fine	41	0	43	0
Foreign, duty-paid, per 190lbs., U.S.	30	0	31	0
Canadian	30	0	31	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	21	6	22	0
Irish	21	0	21	6
Indian Corn, per 240lbs.	35	0	39	0

WAKEFIELD, Mar. 22.

The arrivals of wheat to this day's market are few, and the trade has been dull at a decline of 1s. per quarter. Barley is also 1s. lower, with little doing. Oats and shelling each dull of sale, but not cheaper. Beans steady in value, but a fair business doing. The arrivals are—Wheat, 7,063 quarters; Barley, 3,977; Beans, *2,779; Oats, 460; shelling,* 188.

CHESTER, Mar. 23.

	s.	d.	s.
Old Wheat, white, 75lbs.	0	0	0
Ditto, red	8	8	8
New, white	0	0	0
Ditto, red	8	9	9
Oats, 46lbs., old	2	9	3
Ditto, new	3	0	3
Grinding Barley, per 60lbs.	4	4	4
Malting ditto, 38 qts.	5	0	5
Ditto, inferior	0	0	0
Beans, new, per 80lbs	5	6	5
Ditto, old	0	0	0

DUBLIN CORN EXCHANGE.—Mar. 2

	s.	d.		s.
Wheat, white (per brl.)	33	0	to	35
„ red do.	32	0	to	33
„ inferior, do.	28	0	to	31
Oats, feeding, new	11	0	to	11
Barley	00	0	to	00
Flour, first (per cwt.)	19	0	to	20
„ second do.	17	0	to	18
„ inferior do.	13	0	to	16
„ third do.	7	0	to	12
Oatmeal do.	10	6	to	11

Cattle Markets.

LONDON, SMITHFIELD.

Mar. 25, 1844.

	℘ st. of 8 ℔			
	s.	d.		s.
Inferior coarse beasts	2	4	to	2
Second quality do.	2	10	to	3
Prime large Oxen	3	4	to	3
Prime Scots, &c.	3	8	to	3
Coarse and inferior Sheep	2	8	to	3
Second quality do.	3	2	to	3
Prime coarse woolled do.	3	8	to	3
Prime Southdown do.	4	0	to	4
Large coarse Calves	3	10	to	4
Prime small ditto	4	8	to	4
Suckling Calves	0	0	to	0
Large Hogs	3	0	to	3
Neat small Porkers	3	10	to	4
Pigs, quarter old store, each	0	0	to	0

LIVERPOOL, Mar. 25.

We have a larger supply of cattle at mark to-day than last week. Beef a little lower price; mutton about the same. Beef, 5d. 5¾d. Mutton, 6¼ to 7d. per lb.

CATTLE IMPORTED INTO LIVERPOOL,
From the 18th to the 25th Mar.

Cows	Calves	Sheep	Lambs	Pigs	Hors
1298	4	3632	130	6368	29

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

APRIL—1844.

THE ALLOTMENT SYSTEM.

Few questions affecting the cultivation of, and the farmers profits from, the soil, are more momentous than the one before us.

There are districts in England where the labourers are not permitted to keep even so much as a pig, lest his fattening should tempt them to become stealers of corn. There are others where, in a mistaken zeal for their welfare, landowners have made "small farmers" of them, giving them land to till without affording them, at the same time, the capital necessary for its proper cultivation, or the skill requisite to meet all the exigencies of even a five-acre farmer.

In other localities again every labourer has not indeed his five-acre allotment, but he has a cow as well as a pig, and he has his acre or acre and a half of mowing, whilst upon the farm where he works he has ground for his winter stock of potatoes, at a reasonable rate, and *batch-corn* at a price amounting only to the cost of its production. His small garden affords him vegetables and a few apples for winter use, and though his money wages be but low as compared by those obtained in towns, or under "My Lord at the Hall," yet in positive comforts, who shall vie with the farmer's labourer so circumstanced?

Our attention has been recently called to this subject by a letter in the *Worcester Journal*, headed, "GREAT REDUCTION OF POOR RATES ON THE LAND," from which it appears that the parish of Cholesbury, which in the year 1830 was entirely a parish of paupers, the rates for the maintenance of whom had so far exceeded the rental that the soil was abandoned alike by tenant and landlord.

The rates at the period alluded to exceeded £200 per annum. A benevolent institution, hearing of the destitute state of the parish, obtained 36 acres of arable land which were allotted to eight or ten married men with families. At that time (*i. e.*, the writer of 1831) the following was the condition of the relief list:—

Married men with families	8
The wives and children of the above ..	28
Single men and boys	12
Aged and impotent	15
Total	63

In 1842 there received relief—

Able-bodied poor	0
Aged and impotent	3
Total	3

Were it not for a lunatic in the asylum whose cost to the parish is £26 per annum, the poor rate would not be at this time over

£20 per annum instead of £200. Now it may be objected to *our* view of the question that this state of things has been brought about by something very like a five-acre allotment; it is so—we admit it; but the disease being violent, a remedy proportioned to its character had to be discovered, and it was found in a system ill adapted to a state of things less desperate. The pauperism was relieved, it is true, but partly, we must see by a reduction of four-fifths of the aged and impotent paupers, and partly to the placing of the able-bodied in a situation rendering them capable of self-support. Are we sure that the return from the 36 acres of allotments is as great as it might and ought to be under a different system of management, and are the labourers as well provided for in every respect as they would be under a mode such as the one we have before attempted to describe? Unless these two effects have been produced we shall contend that though the rent of the land alloted has been advanced from 13s. to 26s. per acre, and the evils of a frightful pauperism removed, yet these have been effected by a system necessary it may be under all the circumstances of the particular case, but which yet do not give to the country all the benefit it has a right to, in production from the soil, or to the labourer all the comforts he may, under other circumstances, obtain from it. Our observation through life, and a tolerably intimate acquaintance with the means and appliances of tenant-farmers and agricultural labourers, lead us to this conclusion, that as there is no poorer man than your very small farmer, so there is no man who is more rich in all those comforts of life which his condition warrants than a farm labourer who has a cottage and garden, with an acre of mowing, a cow, a pig, and some poultry —ground for his stock of potatoes, and bread at cost price. These, with regular employment and wages sufficient to pay every just debt, and place in the bank for savings a trifle annually, which, with accumulating interest, will secure him against that dependence "upon the parish" which all such men so much dread, leave, as we before observed, your regular honest and sober farm labourer nothing whatever to envy in the circumstances of the overwrought factory-driven unfortunate, who may by chance earn three or four shillings a week more in money, yet whose condition in practical comforts is far, very far, less; or the five-acre farmer whose anxious labour is but ill requited by the profits from his farm, deducting rent, rates, and taxes, and interest possibly upon the money he has had occasion to borrow to carry on his operations.

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SALT AS MANURE.

In another page we have given two interesting letters, which were read at a late meeting of the Bromsgrove Farmer's Club, upon the value of salt as a fertilizer. Mr. H. F. Fardon, the secretary of that society, having in the course of a very useful paper, which he had read at the previous meeting of the club, pointed out the value of salt to the farmer, in the economy of his manure heap, the letters alluded to were addressed to him upon that subject.

There is but little we can add to the testimony of the gentlemen, whose letters we have laid before our readers. That salt is an indispensable article for stock of all kinds, particularly at certain seasons of the year, on soils lying far inland, has been long satisfactorily proved. In the interior of America tracks are made through the woods, in the direction of the salt springs or *licks*, as they are technically termed, by the deer, buffaloes, &c. for incredible distances—nearer the sea the same necessity for salt does not exist, the air is, more or less, impregnated with saline particles, and the animals are more careless in the use of or search after it. As it is with beasts so we believe it to be with the soil and with vegetation. On the districts lying upon the sea shore, salt has been found of but little use as an artificial aid to vegetation, whilst in the Midland counties, and particularly, as stated by Mr. Fardon's correspondents, on light soils, salt has been successfully applied. The saline particles which are found in the air within certain distances from the sea, supply to vegetation all that is required of salt, whilst further off it is necessary to supply it artificially. As to the best mode of application there is much difference of opinion—some contend for *lime* with salt, mixed for several months, and giving in that time, after a perfect amalgamation, a new saline preparation of great value—others again urge the efficacy of salt as as a means of fixing the ammonia of farm-yard manure, and recommend, therefore, that it should form part of all compost heaps, where animal manure is in any quantity. Now, in either case salt will, in our opinion, be well used—in the former its immediate value is more apparent; but in the latter it is equally useful, though the precise amount of its value be not so readily ascertainable.

We cannot do better than to call the attention of our readers to the report of the meeting of the Bromsgrove Club.

MR. MECHI'S IMPROVEMENTS IN ESSEX.

We have received from Mr. Mechi a long detail of his mode of operations in the improvements we noticed in our last, from which we make the following extract.

Of the clay, we suppose it is, portion of his farm he thus speaks :—

"About two-thirds of it was a strong yellow loam subsoil, in a state between putty and bird-lime, according to the season, here and there mixed with a hodgepodge of stones, to which its attachment was so affectionate that there was no separating them, and it was only by the constant use of water that the land drainers could get their spades in or get rid of this adhesive substance; at intervals might be found veins of silt (the reverse of adhesive,) and here and there the soil would assume a rusty appearance, indicating iron, with a bluish or slaty character; then a patch of gravel occasionally amongst the loam in which would rise a small weak spring, sufficient, however, to ruin the crops in its immediate neighbourhood. Over this subsoil and between it and the cultivated soil, was a hard, dry and impervious pan, formed of the subsoil, but hardened and rendered solid by the heat of the sun and the constant action of the plough-sole. The soil itself partook in some considerable degree of the nature of the subsoil, being, however, ameliorated by mixture of manures and by cultivation. Still so great was the fear of the wretched subsoil that the pan was never disturbed, consequently, there being but nine or ten inches of cultivatable earth with an impervious basis, a dry summer burnt all up, and a wet one ruined the crop by rotting the roots. A showery season was the only suitable one for this description of land.

"Now, however, after draining, in the short space of a few months, we are subsoiling to the depth of fourteen or sixteen inches, and working it like a garden; the water having left it, and the frosty air following the water, it is as mellow and friable as could be desired. In fact, during the last month, whilst our neighbours were unable to move, we were harrowing on our wheat and beans like a rich garden; the earth crumbling down after the drill like sand—very much to the astonishment of the tenant and labourers; and this after so much carting and disturbance, and so much of the subsoil thrown up, that two months previously it was thought a whole summer would hardly suffice to condition the soil.'

So much for the soil. Of the drains he gives the following account. :—

"The drains cross, at a very acute angle, the slope of the land; they are four yards apart, with a leader to every fourscore rods

—the leader being rather deeper than the other drains, but not wider. Still, as it never runs full, it proves in practice my subsequent proposition, that 'the filtration of water, in strong soils, is far inferior to the velocity of its passage through the drains.'

"Each acre contains twelve score rods; and costs ten pounds, requiring 3200 pipes and 360 bushels of stones.

"The style of drainage applied to this part of the farm is as follows:

"First, a double turn of the plough takes out nine inches, then a narrow spade (sufficiently wide to admit the drainer's foot) takes out ten inches; then comes a still narrower spade (fourteen inches long, three and one-eighth wide at top, and one and a half at bottom,) which removes thirteen inches more—making the whole depth from the surface thirty-two inches. The drain being well cleared out, we first fill in the drains to the depth of ten inches, with nice clean gravel stones, and then place, *on the top* of these stones, a drain-pipe, thirteen inches long and three inches wide outside, having a two-inch bore. This fits so exactly into the space made by the last or narrow spade, that it not only rests on the stones, but binds against the sides of the drain, thereby preventing the stones being choked by the superincumbent earth, but also forming the earth above it into an arch; which in the stronger soil would, it is presumed, retain its form even if the pipe were broken or decayed. As this is a plan of my own, and contrary to the entertained opinions, that the tiles should be at the bottom, I will give my reasons for so doing; because,

"1st. It is cheaper.

"2d. It is more durable, and less liable to choke.

"3d. There is a larger *area* of *space* for the *escape* or *filtration* of the water; and this I consider of the utmost importance, and not sufficiently considered. It is quite *evident, that the filtration* of the water must be *according to the area of the pores presented to the air in the drains.*

"It might be illustrated by saying, it is of little use having a large passage unless you have enough side-doors to admit a sufficient number of passengers to travel down it.

"The pores, in contact with *air*, which are constantly admitting the water by its superior gravity, should form if practicable, by admeasurement, *a superficial area equal to the solid unoccupied contents of the pipe or drain* (reduced to an area;) the velocity of passage in the drain being certainly, in a general way, equal or superior to the velocity of percolation.

"It must be considered, that in dense subsoils, the continued winter rains expand the particles and render filtration more difficult—especially during the first year or two after drainage; therefore, I prefer *deep* and *narrow* stone drains, protected from earth by a pipe over them, because they afford ready access to a large and porous surface; filtration going on both on the tops and sides at the drain.

"I would observe, that even on the recently drained strong loam, but little surface water ran away, most of it percolated, except in cases of the ground being frozen hard, and very heavy and sudden rains. It appears to percolate tolerably clear according to the season—but on this point my observations must be more extended. On cutting across some of the drains that had been made six months, the stones were found to be washed as clean as the gravel in a brook."

Of the other portion of the farm, for all it appears was in a wretchedly unimproved condition, Mr. Mechi says:—

"The other third of this farm was the reverse of the first two thirds, and required an entirely different system of drainage. It is mostly black, sandy, and boggy soil, with numerous springs rising at various points were obstructed by perpendicular walls or veins of dense clay or hard gravel, sometimes both.

"The drainage here has been effected by a person, from Warwickshire, a man of extensive knowledge and ability in this department of drainage, who I understand has essentially improved Lord Digby's estates by his judicious sub-draining of the springs. His plan is to take his fall from the lowest point, and gradually work up to where the spring shows itself, having previously ascertained the whereabouts by digging, and by those plants that invariably show themselves over a spring. As springs are generally attended by sand-beds, a single drain will often lay dry a large extent of ground. In one case, where there was a swamp of four acres, the drain was opened at two feet, and continued in a trench till it reached eleven feet in depth—the sand boiling up at intervals like water in a cauldron, of course it was necessary to shore up the sides, and when his level was accurately taken, he commenced laying his pipes on hay (two half pipes, four-and-a-half inches diameter were put together, being internally nine inches by four-and-a-half,) but so strong was the force of the water, it was necessary to have two strongly made iron skeleton arches with wooden sides, about thirty inches high, and the width of the drain two feet. In these arches were laid the pipes, and firmly loaded to the top of the arch with soil to keep the pipes from being forced up by the boiling waters and sand; when loaded, the arches were removed by a lever, the mouths of the pipes being carefully stopped with hay, till the next length of pipe was laid in the next arch (two always being in use, one in front of the other.)

"The result is, that one such drain laid perfectly dry four acres of bog (having a smaller spring carried over or across it;) the first drain runs *permanently* 30,000 *gallons every twenty-four hours*, and several others *nearly as much. It has laid our* neigbour's wells dry, a quarter of a mile off (being in a bed of sand, below their level.) The land (which has been double spitted) is now always perfectly dry, although previously dangerous for cattle and entirely worthless."

He pays a well merited compliment to three very excellent works, from the study of which he appears to have derived much of the zeal with which he has prosecuted his labours, viz., "*Stephens' Book of the Farm*," "*Loudon's Encyclopædia of Agriculture*," and "*Morton on Soils*."

The letter contains, moreover, the following praiseworthy aspiration:—

"I hope that in time to come, farming will be treated as a science, and that there will be as much uniformity in cultivating land as there is in manufacturing cotton. *That* can only arrive by our young farmers deriving an uniform agricultural education—the mechanism for which does not at present exist. Let us hope it may hereafter, and that whilst we have collegiate education for the learned and other professions, we shall at least have agricultural universities and apprenticeships. There can be no doubt that agriculture is the *basis* of society—the most paramount interest in a pecuniary point of view—the regulator of currency and manufactures, which are subservient to it. If we want a proof of this, let us consider that the *stomach* cannot wait a day; *its* claims are *paramount*, and to hunger must succomb all our other enjoyments, whether of manufactures or luxuries."

[The foregoing was accompanied by the following note, which will be read with interest.—Ed. F. H.]

"Mr. M.'s compliments to the Editor, and begs to say he was at the farm on Thursday; all looking healthy and well. *Every foot* of the land will be cropped this season.

"The wheat sown middle March was being hoed out.

"The lucerne was up, on what was a *swamp* last year."

April 23.

Upon the subject of the education of our farmers' sons we shall have a word or two to say in our next number; in the meantime we beg to call attention to the report of proceedings at a meeting held in Gloucestershire, for promoting the formation of an Agricultural College, which we give in another column. It is a question to them and to the country of vital importance, and one from which the serious and anxious attention of all who would direct, in any degree, the agricultural energies of the country, cannot be longer withheld; it is one to which the council of the Royal Agricultural Society ought at once to direct its efforts, for it is a fit subject for the exertions of that influential body; but more of this in our next.

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SWEDISH TURNIPS.

At a weekly council of the Royal Agricultural Society, on the 17th April, Mr Alexander Ogilvie informed the council that during the nineteen years he had lived as agent with the late P. L. Brooke, Esq., of Mere Hall, Cheshire, he had experienced very great and uniform success in the management of his turnip crops, a result which he attributed to the quality and amount of manure he had employed, and the early growth he had given to the plant by sowing the seed in immediate contact with it while in a state of active fermentation. One of his fields, from which in 1840 he had obtained no less an amount of Swedish turnips (cleared of tops and bottoms) than forty-three tons per statute acre, was a clayey loam with a retentive subsoil, effectually drained with tiles some years ago by cutting the drains not more than from five to six yards apart. In 1839 it was broken up from pasture for oats, the crop being good, and as soon as the oats were cut and removed from the field, he had the stubble skim ploughed from three to four inches deep; in that state he allowed the field to remain a month or five weeks, and then had it ploughed from 16 to 18 inches deep, with Smith's subsoil plough. After this operation, the field was not again disturbed until the spring of 1840, when he had it harrowed as soon as it was sufficiently dry. Between the end of March and the third week of May, he had it ploughed and harrowed three different times. From the subsoil ploughing in the autumn, the ground was very mellow in the spring, and after it was three different times ploughed and harrowed, the soil was very fine. The next operation was forming the drills, which were about thirty inches apart. While this was going on, he had the dung, in a moist state, carted out, and spread in the hollow between the drills, with some bone-dust sown over it and covered in *immediately* (to prevent evaporation) by having the drills split out over them. The quantity of dung per statute acre applied, was from 26 to [illegible] tons; and *over* this dung, he had sown with the hand about half a ton of the best raw bone-dust per statute acre. After the dung and bone-dust were covered in, from two to three inches from the surface by the splitting of the drills, he immediately, while the dung and ground were *moist*, had the seed sown by a machine, at the rate of 3lbs. weight per statute acre, taking care that it was deposited *in the dung;* and thus, by being so deposited, it vegetated immediately, and grew out of the way of the fly in the course of eight or ten days. The moisture of the dung and soil, and the heat occasioned by their admixture with the bone-dust, forced the plants for the first fortnight as favourably as if placed in a hot bed. At the end of this period, the plants were almost ready for singling out, which, as soon as they would bear the operation, he had done with the hand-hoe from 14 to 16 inches apart. Mr. Ogilvie stated, that this was the method he had adopted in Cheshire, during a period of 18 years, and d never once missed a crop. He be- ved the lightest crop he ever had during e whole of that period exceeded 36 tons r statute acre. He never sowed later an the last week in May; and whenever ight of crop was wanted, he thought it solutely necessary to sow during that onth. The seed was obtained of Mr. irving, of Liverpool. The plants were ice horse-hoed, and once hand-hoed ter singling. In the previous season all e crop was removed from the ground by he latter end of October; it was ploughed nd sown with wheat during the first week f November: and it was in reference to his grain crop that the unusual amount of anure applied to the turnips was found, the result of produce in both cases, to be th advantageous and economical.

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PROBUS FARMERS' CLUB.

t the last meeting of this Club, a lecture as delivered by one of its members on the rious Insects affecting the turnip crop. f the turnip fly it was stated that they ybernate, or live through the winter in a rpid state, and may be found under the rk of trees, &c; but, inactive as they are ring the winter, on the first indication of pring, they quit their winter quarters for nny situations, and feed in gardens on bbage-plants, as early as March, and in pril they get away to the fields. May and une are the periods when they are to be ost dreaded by the farmer, just as the young turnips are coming into leaf. The sexes pair between April and September, and the female beetle lays her eggs (about one egg daily) on the under side of the leaf. It requires about 30 days to carry the insect through its various stages, up to the time when it becomes a perfect fly or beetle. It remains an egg about 10 days, a maggot 6 days, and a chrysalis 14 days. It is, however, in their last and perfect stage that these insects are most to be dreaded. It is the beetle that destroys the two first smooth leaves of the turnip by piercing them like a sieve, destroying the cellular tissue, and stopping the growth of the plant. It was at this stage of their existence that the lecturer recommended an instrument now frequently used by Cornish farmers, called the fly-catcher—a board newly *painted or tarred*—which while the flies are numerous, should be passed over the same ground three or four times a day; by which means myriads may soon be destroyed. The lecturer then alluded to the effect of lime, sulphur, soot, fumigation, and many other remedies, but did not think they could be depended on. He believed that thick sowing, and the use of artificial manures drilled in with the seed were more effectual, as the turnip, when in rough leaf, is not in any danger from the attacks of the beetle; therefore, it must be evident that our first care must be to force on the young plant, and this can only be done by proper manures, or using such means as he had recommended to destroy or drive them away. Just after the turnips have outgrown the attacks of the fly, they are liable to the ravages of the caterpillar, which the lecturer considered as only a less formidable enemy, because there are fewer seasons which produce them in sufficient abundance to injure a crop materially; for when they do become numerous, there is no greater pest. With respect to the remedy, the lecturer said that the only one which he knew was picking them by the hand. He knew of some fields that had been cleared of caterpillars by means of a flock of ducks driven on them; but there are some kinds which ducks refuse. About the same stage of its growth the roots of young turnips are exposed to another formidable enemy—the wire-worm, which is the most troublesome of all insects to the Agriculturist. It appears that we are yet very imperfectly acquainted with these insects: it is stated that there are upwards of 60 different species of them. It is probable that a very considerable portion of these feed upon our most valuable cultivated plants. The rooks will destroy them, but these birds, while searching for other prey, pull up sound and mutilated plants indiscriminately, so that both worms and turnips are united in one common distinction. In this case we should say, "Save me from my friends." The lecturer considered that the rooks were increasing too fast; their numbers were so great, that they frequently caused much trouble to the farmer. He would diminish them, but certainly not destroy them altogether.

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BECCLES FARMERS' CLUB.

At the last meeting the subject under discussion was Mr. Stace's Prize Essay on the rotation of crops for heavy lands. The rotation therein recommended was a continual course of cropping; this, at first, appeared so extraordinary, that it was thought impracticable; but, upon more mature consideration, the objections were not so great, and it was argued by some members that the rotation might be pursued upon what we here call good deep heavy lands, though upon the generality of wet soils it was agreed as not being desirable to depart from the long-established course, commonly called in Suffolk the four-course shift, viz., fallow or turnips, barley the following spring, then clover or beans, followed by wheat. This has been the system for many years in both Norfolk and Suffolk upon wet heavy lands, though of late a proportion of tares have been grown upon the wheat stubbles—some part for soiling with horses in the summer, and the remainder fed off with sheep; the land being then broken up, and fallowed for barley. It has, however, been found that such tare-land is not kind for clover; it is, therefore, usual to grow the tares upon that proportion of the quarter intended for beans, after the barley crop is removed.

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AGRICULTURAL COLLEGE.

A PUBLIC meeting, held under influential auspices, took place on the 22nd of April, at the Assembly room, Cirencester, Gloucestershire, in furtherance of the scheme for the formation of an agricultural college for educating young men in the practice and theory of agriculture.

Amongst those present were Earl Bathurst, Earl Ducie, Lord Sherborne, Thomas H. Southern, Esq., M.P., Sir John Dean Paul, David Ricardo, Esq., Raymond Cripps, Esq., W. F. Croom, Esq., Dr. Daubeny, C. R. Smith, Esq., and a great number of tenant-farmers.

EARL BATHURST, on taking the chair, said, he would merely remark that the man whose mind was best cultivated was most likely to keep the best place in the race of life. His lordship then called upon Mr. R. J. Browne, the honorary secretary, to read the report of the committee.

The report detailed the circumstances under which the scheme originated, and the steps adopted to bring the suggestion *under the notice of the* public. The idea had been taken from the circumstance of agricultural colleges having been successfully established in Ireland, in France, in Switzerland, in Prussia, in Sweden, and other parts of the Continent; and it appeared from the statement of Mr. Browne that nearly one-half of the necessary funds had already been subscribed or promised.

EARL DUCIE, in proposing the first resolution, which referred to the advantage of establishing an agricultural college, with a model farm attached, observed that he could have wished that the resolution had been placed in the hands of a tenant-farmer, as the question most particularly affected the interests of that class, and of their families; but having been told that it was desirable that those landlords who lived in the district should come forward and evince their desire to co-operate with the tenant-farmers in the formation of the proposed college he had consented to propose the resolution. Upon this subject the opinion which he had expressed from the beginning he still entertained, and it was that, unless the farmers themselves came liberally forward, it would be almost impossible for [illegible] extraneous support to be of itself successful. He was glad to say that the farmers were now beginning to see the necessity of such an establishment as that proposed, because they felt that the education which they gave to such of their sons as they intended to follow the profession of farming was not such as was suitable for the line of life for which they were destined. The farmer could not be blamed for this, as he had not the means of giving his son the requisite education; all that he could do was to teach him what he knew himself as a practical agriculturist, or place him, at a high premium, under the tuition of some neighbouring agriculturist, of whose attainments he entertained a higher opinion than he did of his own. The object of the present meeting was to enable the farmer at a moderate expense to give his son a sound agricultural education; and he (Lord Ducie) hoped that the scheme would meet with the hearty support of tenant-farmers.

Mr. Kearsey, a tenant-farmer, seconded the resolution, and expressed his hearty approval of the scheme. His conviction was, that future generations would thank those who had been instrumental in establishing an institution from which so much benefit had been received.

The resolution was then put and carried.

Earl Ducie having discovered from the remarks which fell from some of the farmers, that he had been misunderstood as to what he said about the success of the scheme being mainly dependent upon the tenant-farmers themselves—observed that he still adhered to the opinion, and begged to repeat that unless the farmers by coming forward in support of the scheme, showed that they were anxious for the formation of the college, it would be in vain to expect the necessary support from the landlord aristocracy. If the tenant-farmers however did come forward and show that they were in earnest, he (Lord Ducie) had not the slightest doubt of the landowners yielding an effective support.

Sir John Dean Paul, in moving the second resolution, which related to the formation of a committee, observed that it was rather singular that farmers should be the only class in the community who were supposed to come by intuition, and not by education, to the knowledge necessary for the proper prosecution of their business. He then adverted to the training to which those intended for other professions were subjected, and showed that in the case of farming, a necessity existed for even greater attention being paid to the education of those destined to follow it as a business. It was a well-established axiom that knowledge was power, and why should farmers be the only parties from whom power should be withheld. If the proposed scheme was cordially supported by the farmers the landed interest would support them in a manner which would *surprise them.*

Mr. Goddard seconded the resolution, observing that as a landlord, he would prefer a tenant who was well educated in his profession to one who was imperfectly educated, other requisites being equal.

Dr. Daubeney moved the last resolution, which referred to a subscription to defray the expenses already incurred. The learned doctor stated that he had visited most of the agricultural colleges abroad, and had found them flourishing and useful.

Mr. Lawrence, solicitor, seconded the adoption of the resolution, and it was carried unanimously. The meeting then separated.

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Important to Farmers and Dealers in Horses.—Mr. John M'Nie, farmer, Woodyett, lately purchased a young horse from Mr. Charles Grindlay, farmer, Seabegs Place, near Dennyloanhead. A full and fair price was paid. The horse proved to be vicious, and was, in consequence, offered back, and repetition of the price demanded. This was refused. Instead of following the usual course of sending the horse to "livery"—having him sold under the order of the sheriff, and prosecuting the seller for the difference of price, which often leads to protracted and expensive proceedings—Mr. M'Nie was advised to bring an action in the small debt court for £8 6s. 8d. as the difference of value between a quiet, steady horse, and the animal in question. The case was heard before James Wardrobe Dickson, Esq., Sheriff-substitute at Falkirk, who held that the pursuer, having offered to return the horse on repetition of the price, and the same being refused, was entitled to proceed in the way proposed without any sale of the horse, and a proof was allowed him of the habits of the horse, the seller's knowledge thereof, which he had failed to disclose at the time of the sale, and the difference of value. The case was heard on three successive court days, and the sheriff decerned for the full sum sued for, with expenses. Very considerable interest was taken in the case by the farmers and dealers in the neighbourhood, and the decision has given much satisfaction. We think it cannot be too generally known and appreciated, because it points out a speedy and cheap mode of obtaining redress in cases which were formerly looked upon as interminable and exceedingly expensive.

By a return to an order of the House of Commons it appears that the following quantities of CHEESE have been imported into the United Kingdom in the year ending 5th of January, 1844: viz.—

	tons.	cwts.
From European ports....	6849	18
American ditto	2115	12
British Possessions	3	19

Of the above London imports the principal part of the European, and Liverpool of the American, whilst Glasgow has received nearly the whole from the British Possessions.

SYDNEY.

The *South Australian Register* states that the *Sans Pareille*, the first wool ship of the season, sailed for Leith on the 14th of December, and the second, the *Elizabeth Buckham*, was to take her departure for London on the 18th. Their united cargoes amounted to 1,200 or 1,300 bales. The review of the progress of the colony during the past year presents some very gratifying results. The export of wool had been 3,034 bales, or 854,815 lbs., which, at 9d. per lb., is equal to £32,055. The produce of the fishery was estimated at £8,738 in oil, and £2,560 in whalebone. The value of the total exports of the year is given at £60,000, and the imports at £77,000. Of sheep in the colony, the number is set down at 350,000; horned cattle 25,000; horses 2,000; and sundry small stock 10,000: being a great increase upon former years, in addition to the daily consumption. Manufactures of various kinds were springing up, and several tons of lead and copper ore, of first-rate quality, had been forwarded to London; but the want of capital had prevented the further working of the mines. The financial condition of the colony does not appear to be quite so flourishing, the estimated revenue for 1844 being £27900 and the estimated expenditure £28425. As compared with the preceding year, however, there is a reduction of £3,200 in the revenue, and of £6,657 in the expenditure.

AGRICULTURAL COLLEGE.—Measures are to be taken for the immediate establishment of the agricultural College in Wiltshire.

IMPORTANT TO AGRICULTURISTS.—The following decision was given lately at the Swinden petty sessions:—Mr. Myers, of Langford, summoned Mary Hiles, keeper of the Westrop gate, Highworth, for having demanded and taken 2s. for toll of a waggon laden with draining tiles. Mr Myers observed, that draining tiles being used for the improvement of the land were exempt from toll, and stated that the magistrates at Fairford, the day before, had so decided, having convicted the gatekeeper of the Lechlade gate, whom he had summoned for taking toll for the same load of draining tiles. Mr. Brace, of Highworth who attended on behalf of the trustees contended that draining tiles where not exempt, not being named in the Act; and although draining had been practised for the improvement of the land for years previous to the passing of the Turnpike Act regulating the tolls, no mention was made of the materials used for such a purpose among those things enumerated as being exempt, viz., "implements in husbandry, or any dung, compost, or manure, employed in husbandry for manuring or improving land, or any other thing employed in the management of any farm or lands;" and he submitted the latter sentence ought to read thus, "or any other thing (of a similar kind) employed, &c.;" for to read it otherwise, the meaning would appear so general and indefinite, that a farmer might put his account books relating to his farm into his gig, and claim exemption, as having a thing in his gig used in the management of his farm. The magistrates concurred in this opinion, and decided that draining tiles were not legally exempt from toll; and consequently Mr. Myers had to pay the expenses.

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METEOROLOGICAL & RURAL OBSERVATIONS.—WINWICK, APRIL, 1844.

THE weather since my last has been delightfully mild, clear, and sunny, and the barometer has indicated a great atmospheric pressure. Spring has indeed at length visited us with its enlivening sweets and pleasing smiles. The sun almost all the "live long day" blazing in full splendour in the blue fields above, warming the swell breath of the frosty breeze, and arousing all nature to love and enjoyment. The trees have begun to bud, the grass to spring, and the flowers to bloom; whilst the warblers of nature's temple are pouring forth their enchanting strains in adoration to the "glorious orb of day."

The hawthorn hedge rows are begun to clothe themselves in their leafy garniture, and the blossom of fruit trees is just in the prelude to a splendid scene that at once charms the eye and pictures to the imaginative mind the glorious prospect of an abundant crop.

The swallow and the cuckoo have just arrived from their winter retreats to enjoy the more temperate rays of an English sun, and to add fresh charms to our rural houses.

In rural affairs, field labour is briskly carried on; spring-sown corn coming up remarkably well, whilst the winter-sown wheat presents an healthy luxuriant appearance.

CALENDAR, 1844.

Mar. 21. Gooseberry (ribes grossularia) in leaf
„ Common Elder (sambusus nigra) in leaf
„ Gelder Rose (viburnam opulus) in leaf
25. Hawthorns (crataegus seu mespilus oxycantha) in leaf
„ Daffodils (narcissus pseudonarcissus) in bloom
„ Currants (ribes hortense) in leaf
„ Potatoes planted
27. Titlark (alauda pratensis) singing
„ Archangel (lamium purpureum) in
„ Frogs (rana temporaria) ruding
„ Oats (avena sativa) sown
April 1. Barley (hordeum sativum) sown
2. Marsh Marygold (caltha palustris) in bloom
„ Chickweed (alsine media) in bloom
5. Violet (viola odorata) in bloom
„ Double Daisy (bellis perennis plena) in bloom
„ Groundsell (senecio vulgaris) in bloom
10. Larch (pinus larix rubra) in leaf
„ Gooseberry (ribes grossularia) in bloom
Apr. 11. Pitwren (curruca sibilatrix) singing
15. Currant (ribes hortense) in bloom
„ Mountain Ash (sorbus seu pyrus aucuparia) in leaf
„ Sycamore (acer pseudoplatanus) in leaf
„ Horse Chesnut (aesculus hippocastanum) in leaf
18. Anemone (anemone memorosa) in bloom
„ Crowfoot (ranunculus aquatilus) in bloom
„ Crowfoot (ranunculus fluviatilis) in bloom
„ Butterbur (tussilago petasites) in bloom
„ Cuckoo flower (cardamine pratensis) in bloom
„ Dog Violet (viola camira) in bloom
20. Pear tree (pyrus communis) in bloom
„ Plum (prumes domestica) in bloom
„ Cherry
24. Elm (ulmus campestris) in leaf
„ Swallow (hirunda rustica) appeared
25. Cuckoo (cuculus canoras) heard

ATMOSPHERICAL OBSERVATIONS, FROM MARCH 21st to APRIL 20th, 1844.

WEATHER.	A. M.	P. M.	Even.	Days.	PREVAILING WINDS. N.	N.E	E.	S.E.	S.	S.W	W.	N W	Total.	
Clear	9	7	13	6	5	0	7	4	3	2	3	5	29	
Fine	11	14	8	11	4	0	5	2	2	2	12	6	33	
Fair, cloudy	0	2	5	0	1	1	0	0	0	1	0	4	7	
Rain	11	8	5	14	0	0	0	0	10	4	6	4	24	Sun shown out A.M. 27; P.M 24; days 28.
Total	31	31	31	31	10	1	12	6	15	9	21	19	93	
	A.M.	P.M.	Days											
Frost	9	1	10		0	0	6	1	1	0	0	2	10	
	0	0	0		0	0	0	0	0	0	0	0	0	
Hail	1	0	1		0	0	0	0	0	0	1	0	1	
	0	0	0		0	0	0	0	0	0	0	0	0	

FORCE OF WINDS.

FORCE.	N.	N.E	E.	S.E.	S.	S.W	W.	N.W	Total.
	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.
1 Calm, or gentle breeze	9	1	9	2	3	1	6	6	37
2 Moderate wind	1	0	3	4	12	8	13	13	54
3 Fresh breeze	0	0	0	0	0	0	2	0	2
4 Strong wind	0	0	0	0	0	0	0	0	0
Mean Force	1·1	1·0	1·25	1·66	1·8	1·9	1·8	1 68	1·622

FALL OF RAIN.

	Days.	Depth. in. dec.
From Mar. 21st to 31st	4	0·390
„ Apr. 1st to 10th	3	0·240
„ „ 11th to 20th	7	0·810
Total	14	1·440

ATMOSPHERIC PRESSURE.

	Max.	Min.	Mean.	Max.	Min.
	in.	in.	in.	Mar.	Mar.
Height	30·60	29·15	29·9871	28 to 31	24&25
Diurnal varia	0·60	0·00	0·2140	28	29&30

Utmost range or greatest variation .. in. 1·45

TEMPERATURE.

	Max.	Min.	Mean.	Max.	Min.
	°	°	°		
Max. or Solar Tem	72	48	59·29	Apr. 9	Mar. 25
Min. or Lunar do.	45	18	33·35	„ 3	Mar. 21
Mean: Diurnal do.	55·50	37 00	46·572	„ 9	„ 21
Diurnal variation.	40·	6·	25 43	„ 8 & 10	Apr. 3

Utmost range or greatest variation........54·.

Winwick, April 25th, 1844.

EDWARD ROTHWELL.

SPADE HUSBANDRY.

(To the Editor of the Ayrshire Agriculturist.)

Sir,—Mr. Houstoun has requested me to inform you that Mr. Boag, Johnstone, has contracted for the trenching of a small enclosure of old lea on the following terms, viz :—The trenches to be 24 inches in breadth. After the first trench is opened, the subsoil is to be raised and broken with the *fork* to the depth of 10 to 12 inches—the opening of the next trench to be by spadings 8 inches broad, and the same in depth, well set up on the previously forked trench—the crumble remaining in the trench to be thrown over the digging as a blinding. In addition to this, the contractor is bound to scatter a quantity of good ashes into each trench, over the loose subsoil, also a few of these ashes on the dug land as the operation goes on—Mr. Boag laying down the ashes for these purposes. The contractor removes all stones, found in the digging to the land behind, thence to some adjoining drains. By doing this, all injury to the dug land from treading is prevented. I may mention that the ground at present is in rather flat ridges, and the surface is to be levelled in the forking operation.

Mr. Boag's *work is to be executed for* £2 18s. 2d. *per imperial acre;* and a stubble field of my father's is undergoing an almost similar operation *at the rate of* £2 7s7d *per imperial acre.*

John Salmon.

Johnstone Castle, 19th March, 1844.

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Rabbits.—Visiting, some time ago, in Ireland, I observed numerous patches of cauliflower plants growing in the shrubberies and pleasure grounds. These patches, the gardener informed me, were for the purpose of destroying rabbits. He powdered the under sides of the leaves with arsenic, which, he said, answered the purpose very well. If fresh gathered leaves of parsley, or of any of the brassica tribe are powdered with arsenic, and if the ground on the sides of the fence is also strewn with it, numbers of the rabbits will soon be destroyed; this should be done in the evenings before they come out to feed.—*J. G.*

Bees.—I beg to inform bee-keepers that I can vouch for the truth of the statement that the Polyanthus yields more nectar which the bees convert into honey than any other plant. I cultivate them round all the borders, as they are the earliest and most valuable bee-flower we have.—*W. W.*

Feeding Calves.—The practice of rearing calves with skimmed milk and a mixture o linseed and wheat ground together, at the rate of 70lbs. of the former to 2 bushels of the latter has been pretty generally followed in this quarter for some time past, and has been attended with good results. In conversing with Mr Hendrie of Highfield, a few days ago, we learned that, instead of linseed and wheat meal he has adopted Sago, of which he gives a handful to each calf, in skimmed milk slightly heated, which furnishes a fine pulpy mixture and is better relished by the animals than the other—while in point of condition they are considerably better than those treated with the former mixture. The Sago can be had for about 18s. per cwt., and not more than half a pound is required for a meal.—*Ayrsh. Agri.*

The Guano Trade.—A sailor coming from Liverpool to Preston, who has been with a vessel for guano, states it to be a most lucrative speculation. He said that the vessel was ten weeks on its passage to Africa, nine weeks returning, and seven lading—altogether a few weeks over half a year. The article itself, he states, costs not a farthing. The vessel carried 500 tons, which, at £8 per ton, would make £4,000. The expenses, he thought, would not exceed £500 ; but if we call them £1,000, the importation of guano is not a bad speculation.—*Lancaster Guardian.*

Horticulture, &c.

Beans.—A dry, warm soil, tolerably rich, is the best for beans. The ground should be worked fine and mellow. The early kinds may be planted in two and-a-half feet wide drills—three inches apart. The green pods of beans may be kept fresh by laying them in a jar or tub with a quantity of salt between each layer.

Parsley.—This is a vegetable of easy growth. It does best in a rich soil. Early cutting contributes to send the plants up thick and stocky, giving a plentiful supply during the season. The seed should be steeped in warm water 24 hours before sowing. A little sulphur is sometimes added.

Lettuce.—Requires a fine mellow soil. It may be sown early in the spring, and at intervals, up to July, to ensure fresh crops during the season. For very early cuttings, lettuce may be sown late in autumn, and covered with straw in winter. It may be sown broadcast, or in rows 18 inches apart. Thinning is to be attended to, to prevent the plants crowding upon each other. Eight or ten inches apart is the proper distance if large heads are required; if small, 6 inches.

Asparagus.—This delicious esculent is more perfectly cultivated in the deepest soil in the garden; a rich sandy loam is the best. The ground requires to be trenched 18 inches deep, thoroughly mixed with well rotted manure, completely pulverised and raked smooth and level. It must then be laid off in beds 6 feet wide—with drills two feet apart, and two inches deep. The seeds ought to be steeped 12 hours in water slightly heated: and should be dropped about an inch apart in the rows—the mould raked smoothly over, and lightly rolled. Thin the plants to four inches apart. A bed of asparagus will produce beds fit for cutting the third spring after sowing. The dead straw should be cut off beneath the surface, and a top-dressing of an inch thick of good manure applied in the spring, and raked into the soil. Roots of two or three years' standing may be transplanted, crown upwards, at four inches depth.—*Ayrshire Agriculturist.*

The only Specimen.—At Lord Wicklow's seat, Shelton Abbey, county Wicklow, there is a tree of the Olea panuculata, near forty feet high, a wonder to all the gardeners in the neighbourhood, and probably the only specimen in Great Britain in the open air.

Notices of New Plants.—**Eranthemum Pulchellum.** Pretty Eranthemum. *(Evergreen Shrub.)* Acanthaceæ. Diandria Monogynia.—Combined with the disposition for winter flowering, this species has an erect bushy habit, without any tendency to become straggling, or naked in the lower part of the stem. On the contrary, it is clothed with leaves of a full deep green, and of considerable breadth, down to the very edge of the pot, if any attention at all is paid to its culture. The intense brightness of its sky-tinctured blossoms lends a showiness during the first three or four months of the year, which is the more acceptable from having fewer competitors than if they were produced at a more advanced period. To realise its highest character it must be grown in a roomy pot, or planted in a border. When grown in pots, it must be planted in a more retentive soil than is usually employed, and nothing can be better adapted than a strong loam, such as is procured from the decayed sward of a pasture. A liberal supply of water is indispensable to its vigorous growth. But perhaps it is seen to the greatest advantage when planted in the border of a stove, where its roots are unconfined, and it can grow without restriction. At Chatsworth it is planted in the borders of the large stove conservatory, where it forms bushes several feet in circumference, and produces a profusion of flowers for several successive months. After flowering, the shoots should be pruned back to within an inch or two of their base. It is a native of the coast of Coromandel, in the East Indies, from whence it was sent to Kew gardens towards the close of the last century. It may be increased readily from cuttings, put in sand, in a slight bottom-heat; and if allowed sufficient pot-room, these will make handsome bushes in the course of a season. —*Paxton's Magazine of Botany.*

A lovely new flower is blown this morning, of which only one was raised, from Narcissus poeticus by N. moschatus minor, the N. candidissimus of Redouté. The leaves are now nine inches high, $\frac{1}{4}$ in. wide, glauceous; the stalk 6 in.; the peduncle precipitately curved down; the tube green, $\frac{3}{8}$ths in. long, equalling the spathe, and hanging at the distance of a quarter of an inch from the stalk; the limb white, acute, $\frac{7}{8}$ths of an inch long, forming a horizontal star, the cup at first opening faintly, tinged with yellow, $\frac{5}{16}$ths in long, $\frac{7}{16}$ths in. wide, irregularly six-lobed, and so much indented as to look almost fringed; anthers slender, all standing out of the tube, equalling the style, shorter than the cup; pollen yellow, abundant; scent agreeable, but weak. It would have served Mr. Haworth for a new genus, if he had been alive. Also just expanded a dwarf robust mule from Ajax minor, (the least daffodil) by Hermione, States-General of the shops, with two large creamy pale-yellow flowers, genus Diomede of Haworth. Several editions from the Yorkshire Daffodil by different varieties of N. poeticus, all yielding a smaller and paler form of F. incomparabilis, which comes from a larger and deeper coloured Daffodil of the South of Europe. Seedlings from Ajax minor, by Maximus, are also in flower exhibiting great diversity from the same pod, the largest having the cup long, and not in the least recurved.—*W. Herbert, Spofforth, near Wetherby, April* 11, 1844.

Luculia gratissima.—In propagating this I take a piece of light peat and break it quite fine, I then add about one-third of fine silver-sand; I mix this well together, and taking some small thumb-pots I place one crock at the bottom of each pot, and fill them with the above compost about three parts full; I press this down firm, and take some little sticks and put down in the centre of the pots. I then select cuttings of the half-ripened wood, and placing one in each pot I tie them up to the sticks in the centre of the pot, and fill the remainder of the pot with silver-sand. When this is done I give them a good watering, to settle the cuttings. I then take a large pot and fill it half-full of draining and the remainder with sand or gravel, and then plunge four of the little pots in this large one, and place a bell-glass over them. The whole is then plunged in bottom-heat, and in about a month the cuttings are rooted and fit for potting off into small 60-pots. I then keep them close for about a week or so. There is a second species that has lately been raised from seed, sent to this country by Dr. Royle, which strikes much readier than gratissima. The habit of the plant is strong, and the foliage is dark-green; but judging from a native specimen of the flower, I should say it was very inferior to L. gratissima. It has also been raised from seeds sent to Chatsworth by Mr. Gibson, and although they have had the plant four or five years, it does not show any symptoms of blooming.—*Amicus.*

Fuchsias.—You may plant out these in the open border about the middle of May, when there will be little danger of their being injured by the frost. Allow your seedlings to grow without topping the first year. The second year they may be treated in the usual way. Plants damp off from being kept without air. But little care in this climate is necessary to preserve some kinds through the winter, and when they have stood out the plants are much stronger, and flower more freely; but they require careful pruning. A correspondent in the *Gardeners' Chronicle* remarks, that he had two seedling Fuchsias growing in the south window of a room. The pot in which they were was accidently knocked over, and both plants were broken off by the roots. He states that he put them in as cuttings, and placed them in the same situation, where they are now both in a healthy growing state. The leading shoot of one of one of them was also broken off, and the plant, in consequence, is sending out shoots all round, which he imagines is preferable to a single stem.

Pansies.—Lady Alice Peel is a large, showy, well-formed flower, of considerable substance; the eye good, and the belting, though rather broken, is uniform. There is a slight roughness on the edges of the lower petals, and also a dash of yellow in the lip, which injures the uniformity of the ground-colour..

Onions.—There is no better plan of fastening these in very light soil than that of *rolling the beds.* We have seen beds rolled firm, even after the plants were 6 or inches above ground. The onions afterwards grew away quite strong, and wer not injured by the rolling.

Manures.

BONES.

Having inserted in a previous numbe (page 42.) some remarks on a paper upo this subject, which appeared in the *Gardeners' Chronicle*, an esteemed correspondent who has himself written in our column upon bone manure, requests us to give in spirit of fairness the paper which called fort those remarks, in order that our reader may have both before them; this we hav much pleasure in doing. Whatever may b the predisposing cause of fertility in bones and of which reasonable doubts exist, ther is no doubt whatever of this, that they tak a very high rank as a manure. Upon permanent pasture we have not yet heard tha the term of their durability has been discovered, and the improvement effected i the herbage by their means is perfectl astonishing. But let us go to the pape from the *Gardeners' Chronicle* :—

IN WHAT CONSISTS THE FERTILISING QUALITIES OF BONES?

While every farmer occupying a sandy o peaty soil will acknowledge the incalculabl value of bones as a manure, scarcely two practical agriculturists or chemists will agree as t what portion of the bones it is which furnishe the fertilising principle. Sufficient facts, however, seem now collected by the former class o persons, and sufficient analyses made by the latter, to furnish data to enable us to decide thi not unimportant question; for it is only b ascertaining the precise fertilising principle o bones, that we can certainly calculate whe certain soils are in need of a dressing of them and when they are an injudicious application.

As regards the practical results of their application, we may safely lay down the ascertaine facts, that they are most useful to peats an sands, and least useful to tenacious soils. It i likewise established that they are, of all crop most useful to turnips, and succeed when applied alone, in producing many tons per acre on land which without manure would not matur a single plant.

It is settled, too, according to the authority of Fourcroy and Vauquelin, that bones consist of

Decomposable animal matter	51· Parts.
Phosphate of lime	37·7
Carbonate of lime	10·
Phosphate of magnesia	1·3
	100

Now the question arises, is it the mineral or gaseous principles to which their value is to be referred, seeing they contain these in nearly equal proportions?

To begin with the mineral. Many writers contend that this is the element to which bones owe their value. The Highland Society of Scotland offered the gold medal for the best essay on the subject of the fertilising qualities of bones as compared with farm-yard manure, and the prize was awarded to Dr. Madden, who gave it as his opinion that the value of bones was principally due to the phosphates which they contain. His calculations, however, have been proved to be fallacious, and are known to be quite erroneous in principle, though at the time they were thought by some to have settled the question.

Now, admitting that about six cwt. of bones is the average application to an acre of land, something like 2¼ cwt. of phosphate of lime will be applied to the soil; on the other hand, calculating twenty tons as an ordinary dressing of fold-yard manure for turnips, and calculating it to contain, on the very lowest average, three per cent. of phosphate of lime, we shall have no less than twelve cwt. of phosphate of lime supplied by it to the crop. If it were the phosphate of lime to which the whole of the credit were due, how does it happen that bones are peculiarly beneficial to turnips, which compared with many other plants, contain but a small comparative per centage of it, and why is it not equally efficacious on clay soils, where there is so constant a drainage of their phosphates by taking away the wheat? and why is it so useful on peaty ground, which generally abounds in phosphates? To show that we have not over-rated the phosphates in farm-yard manure, under ordinary circumstances, we may just refer to Liebig, who gives horses' dung as containing 5 per cent. of phosphate of lime, cows' dung 10 per cent., and straw varying from 7 to 16 per cent.

As regards the very small quantity of phosphate of magnesia, the above remarks apply in greater degree.

It is, then, the animal matter—consisting principally of gelatine, but also containing some fat, oil, and cartilage, to which bones owe their value? Galatine, according to Gay, Lussac, and Thouard, consists of the following proportions of—

Carbon	47·88 Parts.
Oxygen	27·207
Hydrogen	7·914
Azote	16·998

It would therefore appear that bones contain about 8 per cent of azote, and to this we submit, nearly the whole of their fertilising qualities owe their existence. Azote is the principal feature in all powerful or concentrated manures—the base, so to speak (if the term may be allowed in this sense) of all the forms of the nitrates, and the compounds of ammonia—two forms of gas by the quantity of which, as by a standard, nearly all manures may be reckoned in value, because crops supplied with a full quantity of azotised manure invariably excel in luxuriance, being thereby enabled to assimilate a greater quantity of their other constituents.

The great value of bones, moreover, above many other azotised manures, consists in its having its peculiar elements in a state of considerable fixity. While the nitrates require only solution in the soil to set free their azote with great rapidity, and while the various forms of ammonia are even still more volatile, the gelatine in bones requires to be fermented, and to undergo a process of decomposition anything but rapid, before the azote will be given off; and when it is so given off, it is in a way so gradual, as to be in strict applicability to the wants of the plants.

It has been asked, with some degree of confidence, if the bones owe their utility to the gelatine, how does it happen that burnt bones are also in some cases decidedly advantageous applications as manure? The experimenters, however, did not say how they were burnt. If they were burnt to whiteness, so as to crumble to powder, doubtless they would be deprived of the whole of their azotised matter; and if these were equally useful with unburnt bones, doubtless practice would decide against our theory. But if the bones were but partially burnt, only to blackness, or burnt in a confined position, the azote would not be dissipated in any great quantity, but only made more volatile, and therefore likely to produce an equal if not greater effect upon the crops, though they would not be of such permanent value. For if the burning did partially carbonise the bones the carbon would take up the ammonia, for which it has considerable affinity, and give it off only on the application of excessive moisture. Bones thus burnt may therefore have even a more apparent influence on the first crop, and in its early stages, than unburnt bones; but this rather confirms than invalidates the opinions stated above.—*W. E. N.*

GUANO.

Messrs. Carson and Kilgour, of Liverpool, have published the following statemer with reference to the newly imported African Guano, of which large quantities ha been sold:—

Ichaboe. Gen. Peruviai
Average result of various analysis made by Dr. Ure gives of available matter 88 parts in 100
Mr. Huson's analysis .... 86¼ „ „
Average...77¼
Dr. Ure's 76
The one may be compared to the other as 7 to 8, or in money £8 15s. to £10.
The weight is 8 to 9.

Being a drawback to Ichaboe, as the consumer would be put to about 40 per cent. extra charg on carriage, labour, &c., to obtain equal quantity of available matter, consequently allowing t consumer 5s. per ton, is what might be considered the relative value, £8 10s. to £10.

How does the case stand at present? We will take for instance a sale from the ship's side 100 tons. Cwt genuine Peruvian Guano at £10. £1000.
Charges on ditto to consumer say 50 £1050. Available matter 800

142 .. 17 .. Ichaboe Guano £7 999 19
Charges on ditto „ say 70 £1069 19 999
20 199

Shewing clearly under existing circumstances that Ichaboe Guano, to the consumer, is 23 p cent. cheaper than Peruvian.

The following calculations will show the relative value to the Agriculturist of the differe qualities of guano hitherto brought to this country:—

Description.	Comparative weight.	Avail. mat.	Tons, cwts., &c.	At per ton.	Amount.	Contains avail. mat.	Supposed labour and charges.	Total cost.	Extra cost of labor ⅌ ton.	say	Cons quen relative valu
				£. s. d.	£.		£. s. d.	£. s. d.	s. d.	s. d.	£ s.
Genuine Peruvian.	930	88	100 0 0 0	10 0 0	1000	8800	100 0 0	1100 0 0			10 0
Ichaboe	800	77	114 5 2 24	8 15 0	do.	do.	114 5 9	1114 5 9	2 10	3 0	8 12
Angra Pequena ..	990	69	127 10 2 26	7 16 9	do.	do.	127 10 9	1127 10 9	5 6	5 9	7 11
Possession Island..	1030	61	144 5 1 0	6 18 7	do.	do.	144 5 3	1144 5 3	8 10	9 1	6 9
Puerto Cabello ..	870	57	154 7 2 24	6 9 6	do.	do.	154 7 9	1154 7 9	10 10	11 0	5 18

Messrs. C. and K., in addition to the supplies from Africa and South America, sugge that guano may be imported from the following places:—

The Bird Islands, St. Lawrence Gulf.—Labrador and Newfoundland Coasts.—Islands Aves, Sombrero, and Tobago, West Indies.—Islands of Ascension, and Rocks of St. Paul, ne the Line.—East Coast of South America, parallel with the West from whence it is brought.

BROMSGROVE FARMERS' CLUB.

A meeting of this club was held in the Town Hall, Bromsgrove, last month, which was numerously attended. G. F. Iddins, Esq., was called to the chair.

The minutes of the last meeting having been confirmed, Mr. H. F. Fardon read a second paper on the subject of manures. After briefly reviewing the contents of his former paper, he observed that nitrogen is contained in a small proportion in every part of a plant, and the application of a substance, ammonia for instance, capable of yielding it to the plant seems to bring all the powers of vegetation into vigorous ction. *If other substances* necessary for the nutrition of the plant be not present a sufficient quantity in the soil to supp this increased growth, we have a crop ra but inferior in quality. If present in abu dance, the necessary support is afford and the crop is good. Hence the impo ance of a proper combination of manu Farm-yard manure, when properly heat affords ammonia and the other ingredie required. Guano, sulphate of ammo and soot, supply ammonia to plants, seldom fail to produce a powerful eff Guano also contains phosphate of li which is the chief material of bones, a very valuable manure. Another class manures supplies other inorganic ingr dients to the soil. Potash, carbonate of soda, and common salt are of this description. The application of these will produce a striking effect if the soil is deficient in them. Common salt (he continued) has lately attracted much attention as a manure, and I believe that upon light soils it is a very valuable one. I have already recommended its application to fix the ammonia of the manure heap, and I now recommend it as a manure for the land. · It is proper that I should begin my remarks by proving to you that salt does act as a manure, and then offer an opinion as to the mode in which it acts. I have received since our last meeting two letters addressed to me, as secretary of this Club, on the use of salt as a manure. These letters contain the actual experience of two thoroughly practical agriculturists. The first I received from Mr. John Wilson, of Aston Claverly, near Wolverhampton; the second from Mr. Mathews, of Park Hall, near Kidderminster. The following are copies:—

Aston Claverly, near Wolverhampton,
March 23rd, 1844.

Sir,—Having observed in the *Worcester Herald* of the 7th instant that you, at a meeting of the Bromsgrove Farmers' Club, introduced the subject of salt as a manure, and that the Club came to the decision of recommending it for trial, I conclude that salt like a prophet, "Hath no honour in his own country," otherwise a trial so near to Stoke or Droitwich would not now be wanted. I therefore trust you will not consider me obtrusive in offering a few remarks and stating to you the result of my experience and my opinions on the use of salt for agricultural purposes; and if you are able to obtain any the least useful hint from what I state, my purpose will be fully answered.

I believe the use of salt as a manure, generally speaking, to be little understood, otherwise I think it would be more extensively used. It has been tried or applied to all descriptions of land indiscriminately; hence its failure, and in many instances its condemnation.

I have used salt for agricultural purposes many years with success—at first experimentally and very cautiously; and am so thoroughly convinced of its utility, that I use it very extensively. I am now applying it for barley on all my lightest soils, containing any considerable portion of vegetable matter, at the rate of five to six cwt. per acre; also on my wheat of the autumnal sowing on the same description of soils, and at the same rate per acre. I did so last year with great success. I gave it, as in other years, a fair trial, by leaving a strip in each field without the salt, which in every case plainly showed itself in the months of May and June, particularly in the wheat.

We consider our land to bear white wheat better than red, but in the latter end of May and the beginning of June it is very much more subject to the red rust, a disease very detrimental here, but it is completely obviated by the use of salt, and the sample is much finer, the yield better, and much freer from light or diseased grains when salt is applied.

I last year salted a twenty-acre field for barley at the rate of six cwt. per acre, leaving a strip the whole length of the field without; at harvest the greatest novice might have discovered the difference, the salted being very superior, in sample and colour. I last week winnowed 300 bushels of it without a single bushel of light,—a circumstance which does not occur with us this year where salt was not used. This was grown on land which ten years ago was considered not worth cultivating, but wonderfully improved by the use of bones and salt, and now grows as good turnips and barley as any land I have.

I think the Bromsgrove Club will approve of salt as recommended for trial in fixing the ammonia in manures. I use it for that purpose very satisfactorily.

We are very subject to grow scutch, and many of us (to our shame) much more than we ought to do; but when we have it, we endeavour to make the best use of it, and I have now mine in a state of preparation for the land for turnips. I draw it in heaps in autumn, apply a considerable portion of salt to it in the winter; after which, and turning and mixing, I add fold-yard manure; this I again turn and mix, placing a layer of the scutch on the bottom of the heap and also a layer on the top, over which I strew salt sufficient to keep the surface moist and prevent the escape of the ammonia. In this state it remains until about three weeks of the time I want it for the turnips, when I again turn it; and when used it comes out an excellent manure, which it would not do without the application of salt.

We also use it advantageously in heaps of vegetable compost for rough grass land of light or sandy texture; and I believe the greatest mistake in the use of salt is that of applying it to cold strong arable land, when I think it worse than useless; but when judiciously used on light soils, containing vegetable matter, it will be found very valuable for nearly every description of crops; and as it is now to be had at a reasonable rate, I have no doubt it will, in these days of discernment, be extensively used, and that very beneficially.

I remain, Sir, yours very obediently.

To Mr. H. F. Fardon, &c. JOHN WILSON.

Park Hall, near Kidderminster, Mar. 23, 1844.

Dear Sir,—I have just had much pleasure in the perusal of the observations made by you at your Bromsgrove Farmers' Club on the subject of manures, as reported in the Worcester paper. They are judiciously made; and without going too far into the somewhate abstruse details of chemistry, they exhibited a perfect acquaintance with that science and of the applicability of its principles to the subject you undertook to treat upon.

It is mainly on the subject of *salt* that I now address you, as I am anxious you should know the good effects I have found to result from the use of it, and the extent to which I agree with you as to its value for agricultural purposes.

If salt were found only on the shores of South America, and imported here at the price of guano, I think it would be in more general use than at present. Its value no one attempts to question, but nevertheless its application is very limited.

My experience to is effects is confined to light soils; and, upon such, I know of no article so greatly and so generally beneficial. Its copious use to every description of stock I regard as indispensable. For turnips, barley, clover, and wheat, it is equally beneficial, used either as a top-dressing or worked into and incorporated with the soil. Nor is it of value only as regards an *increase* of produce, for I have always found the *quality* greatly improved where it has been used largely. The fold-yard should have an abundant supply: it should be applied at the least once in every week. Upon grass lands, whether upland pastures or watered meadows, I have found its use alike advantaegous. I have generally applied it in the form of a compost with soils, but I do not consider this as necessary. Last spring I dressed a meadow of five acres with salt and soil, putting on about 30 cwt. per acre of salt: the effect was most convincing both in the hay crop and aftermath. The sheep and cattle I turned into it had access to an adjoining meadow, and their preference for that which had been salted was really ludicrous; they could not be induced to leave it when it was as bare as a common, while the other meadow had abundance of grass upon it.

Make what use you please of these remarks, and in the continuation of your paper pray do the community the good service of urging the more general use of salt, especially in the Ryeland districts, and I am satisfied that every man whom you can prevail upon to adopt its use largely will ultimately thank you for the good you confer upon him.

I am, dear Sir, ever faithfully yours,
(Signed) J. Mathews.
Mr. Henry Fardon, &c.

The lecturer then continued—These letters afford practical evidence of the value of salt, and I hope farmers on light land will try it. I intend to do so, and will report to the club the result of any experiments I may make. Salt may probably act in various ways. It may operate in fixing ammonia by converting the volatile carbonate of ammonia into the fixed muriate, being converted itself into carbonate of soda, a valuable constituent of manure. Salt may also benefit light dry soils by its attraction for water, and it has the effect of rendering herbage more palatable to stock. Gypsum is another manure of known value, especially to the clover crop which contains it. A third class of manures act by improving the mechanical texture of the soil, and of these lime is the principal. This may be applied either in a compost or directly to the land. To decompose animal or vegetable matter it should be used immediately after slacking. The heat of the kiln drives off carbonic acid from the limestone and leaves quick lime, which will unite with water, heat being evolved. If it is afterwards left exposed to the air it will absorb carbonic acid, or if mixed with substances in a state of decay giving off carbonic acid it will absorb it, and thus promote decomposition. In the form of a carbonate it will not do this. If applied directly to the soil for the purpose of improving its texture it may be used in the form of a carbonate, though in its newly slacked state the benefit of the chemical action would be secured. Soaper's ashes is valuable chiefly on account of the different salts of lime it contains and its mechanical action. This paper is intended to explain the leading principles which determine the value of different manure rather than to enter into detail. The obje of manuring is to supply the soil with i gredients of which plants exhaust it a to improve its mechanical texture. T value of a manure depends upon the ext to which it fulfils one or both of these en

The reading of the paper was follow by a long discussion, chiefly on the use salt as a fixer of ammonia and as a manu In reply to an inquiry made by Mr Wrig Mr. Elliot stated that when common s and carbonate of ammonia are brou together in solution a double decomposit takes place. Mr. Maund quoted Mr. Sol to the effect that such action would take place in a concentrated solution, that salt would not be likely to fix ammo in a manure heap. Mr. Elliot replied t the action took place in a strong solution, but it was out of the power of any chemist to ascertain whether it had taken place in a weak solution or not. Mr Elliot thought that the chief merit of salt as a manure consisted in affording a supply of soda to plants rather than in fixing ammonia. He considered that plants had the power of decomposing common salt and obtaining the soda, but this was merely a supposition which he intended to bring to the test of experiment. Surprise was expressed at the statement of Mr. Mathews that he had used salt at the rate of 30 cwt. per acre. It was considered that such a quantity would generally prove highly injurious, and that 5 to 6 cwt. per acre was the outside that should be used. A letter addressed to the editor of the *West Briton*, detailing experiments in the use of salt, was handed to the Secretary and read. Ultimately Mr. Maund proposed that experiments should be tried by some members of the Club in the use of salt as a top dressing for wheat, and offered to prepare blank forms for the purpose of recording the results for the use of the Club. Messrs. Iddens. Wright, Cresswell, Bick, and Heynes, consented to join in the trials. It is proposed to try different quantities up to 5 or 6 cwt. per acre.

Mr. H. F. Fardon was requested to continue the subject at the next meeting, and Mr. Maund consented to read a paper on the turnip fly. It is expected that valuable information on the origin of this insect and the means of preventing its ravages will be brought forward by Mr. Maund and others.

Reviews, &c.

Report of the Poor-law Commissioners on Local Taxation. PUBLISHED BY AUTHORITY.

THOUGH not strictly a work on Agriculture, and therefore not exactly within the range of our duties, yet the volume before us treats so immediately of the liabilities of the soil, that we have pleasure in directing the attention of our readers to its pages.

In the form of a report to her Majesty's principal Secretary of State for the Home Department, the Poor Law Commissioners have made suggestions, having for their object improvements in the mode of rating, collecting, and dispensing the *sums* required for the various purposes of our local taxation.

Amongst others of these suggestions is the one often recommended, but not yet acted upon, (nor likely to be until tenants have a chance of equal votes upon legislative subjects with landlords,) which would place the rates really and in truth upon the shoulders of the landowners, whilst the occupiers would be merely the hands to pay, and, as the law at present stands, to apply them, though this latter provision, would, to our mind, be scarcely fair—yet hear the commissioners:—

"Many inconveniencies and anomalies arise from the fact that the *legal* character of the poor's rate and of all the local rates except the sewers rate, is not made accordant with its real and *essential* character. These rates are, essentially, taxes on the rent of the landlord, not taxes upon the occupier's profits; no legal declarations, no limitations of legal remedies to the person and goods of the occupier, however much they may disguise the aspect of the tax or make its burden operate unequally on rent, can make it fall permanently on any thing but rent. If the same rates were all avowedly laid upon the landlord, but made leviable upon any goods found upon the rated property, the occupier being enabled to deduct his rate from his rent, the amount of net rent which would then be paid to the the landlord would, doubtless, be the same as now, but there would be no disguise of the real incidence of the burden. Then, also, the right of the landlord to a superior share of power in vestry, and in the election of guardians, to protect himself from injustice in the imposition, and from mismanagement in the administration of the taxes to which he would then be seen to be the sole contributor, would not be viewed with the present jealousy, if indeed it were at all contested. This result would be not only valuable for the sake of the abstract fairness of giving protection to those whose interests are really involved; but would be equally desirable for the sake of those classes who, though not interested as tax-payers, are otherwise deeply interested in the proper administration of the laws; for perhaps the greatest abuses which ever prevailed in the administration of the poor laws arose from this fact, that the tax fell, and that it was found out by the occupiers that it did fall, upon the landlords, while the administration, expenditure, and appropriation of the tax was given exclusively to the occupiers, who did not really bear the burden.

"The attempt to give the tax the appearance of an occupier's tax, involves besides many other practical inconveniences.

"The chief of these inconveniences is that, in looking to the occupier for payment instead of looking to the receiver of the net rent, a poor and insolvent contributor is often looked to instead of a solvent one—a casual and fluctuating contributor instead of a permanent and fixed one. The poor occupier escapes through his apparent inability to pay and through a leniency and consideration towards him which would be manifestly inapplicable to his landlord. Moreover, the rate, or a fragment of it, is frequently lost, both at the beginning and at the end of the term of occupation of a fluctuating class of occupiers; and this loss is, of course, more frequent in proportion to the shortness of the term, or as the change of occupiers is rapid; although, in these cases, the rent keeps its unvaried average, and the landlord is as permanently accessible, and his benefit as constant, as that of the landlords of other kinds of property that do not escape their burdens. In other words, the sympathy towards the poorer class of tenants produces its advantages, not to them, but to their landlords; their occasional inability to pay brings relief not to them, but to their landlords; and their more rapid change of abode serves, through the disguise of the tax as an occupier's tax, to render the permanent interest of their landlord's inaccessible to taxation.

"Another inconvenience results from this: in order to catch the occupier it is necessary to make the remedies very much more stringent than would be necessary if it were made clear to the occupier that what he paid in rate he would deduct in the rent. Committal of poor occupiers to gaol for non-payment of rates would certainly be unnecessary if the rate were made in law what it is in reality—a landlord's tax, and an avowed, instead of a disguised deduction from rent. Again, the pursuit of the removing occupier's goods and person into other parts of the country, beyond the district of taxation, from the labour and difficulty involved in resorting to it, is for the most part an illusory remedy; but where it is resorted to is still only made use of at the cost of considerable time and trouble, and is in all cases a gratuitous difficulty imposed upon the collectors of the rate, in consequence of the statutory disguise of the tax as an occupier's. Indeed, allowing for the greater amount in the calls for the general tax, it seems to us to be highly probable that the difficulty of collection, if its character as a landlord's tax were made apparent, would be very little greater than that now encountered n collecting the present land tax and sewers rate.

"Another most important advantage arise from making the real incidence of apparent, namely, the lessening of dissati with the tax, and the consequent dimin litigation. The occupiers would see th were not interested in appealing. The la a much less numerous class, would, fron extended consideration of the value several tenements, refrain from appeal an inequality unfavourable to them in was balanced by an inequality quite as fav to them in another case, and where the only obtain redress in one instance by in an equal burden in another.

"The same cause would also prod beneficial effect of diminishing much agitation and dispute in vestries, arisi the unfounded belief of the occupiers th are affected, when, in fact, they are not a at least, all those cases in which vestrie rates for the permanent benefiting of t in the neighbourhood, as in the case highways, and many of the occasions wh produce most vehement complaints of diture for permanent but costly improv as for various county structures,—bridge asylums, assize courts, and the like,- assume quite another character, when clearly seen that these advantages to th lord's property where wholly paid for ou landlord's profits."

This proposition does not in fact i the imposition of any new burther the landlord—it is simply to call by their right names, and, as above to make the *legal* and the *essential* ter of the rates the same. Essentia rates are burthens upon the lan therefore upon the landowners, a payment by the tenants as a class not, *cannot*, alter the position that they are paid by them for the landl the rule being invariable that the the rates the less the rent. Our number affords a practical illustra this in the instance of the parish of bury, where one rate alone, viz. *the rate*, for some years swallowed up n all the rent of the landlord, but farmer's profit also.

The commissioners wind up their by recommending to the governmen ral alterations in the law, some of

rtain modifications, are embodied
ills now before parliament.

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plements of *Agriculture*, by J. A. me. (*Third notice.*)

e before drawn the attention of our
to this very handsome volume of
nsome, and we have pointed out
' his sins of omission—it is our
duty, however, on the present
, to commend very highly the sec-
ropriated to *Harrows*, *Cultivators*,
rifiers; and we think no apology
ssary for the length at which the
as considered these implements—
' of great importance to tillage

making of *Harrows*, Mr. R. in-
the opinion that iron is preferable
for, says he—

> ı experiment made between a pair of
> arrows and a pair of iron ones, con-
> n the same plan, having the same
> nd precisely the same disposition of
> and frames, although those of iron
> d to be 20 lbs. lighter than those of
> the former worked decidedly better
> er than the latter! in fact, the iron
> ıt into the land, while those made of
> , or rather danced, on the surface.
> o the length and position of harrow
> ıe common plan is to set them spring-
> forward and gradually increasing in
> n the fore to the hind row. There
> ntage in this, but the contrary; for,
> on of harrows so constructed be care-
> ined, it will be found the reverse of
> ught to be,—the hind part will be
> , and the fore teeth, short as they are,
> o do all the work. In some experi-
> le with harrows, the fallacy of the idea,
> quality in the length of the teeth was
> the proper working of harrows, was
> ent. For this purpose, a harrow was
> d on the old-fashioned plan of un-
> pringing teeth, was reversed, putting
> t teeth in front; the whole of the
> pointing *backwards* instead of *for-*
> othing could work better; there were
> and snatches, but all went on smoothly
> ly. I do not, from this circumstance,
> d harrows to be so constructed, but
> ubt that each harrow should have all its teeth of equal length, and they should stand perpendicularly from the frames."

He then goes on to notice *Armstrong's Harrows*, *The Web Harrow*, exhibited at Bristol by Mr. Smith of Deanston, at the meeting of the Royal Agricultural Society of Enggland—*Martin's Revolving Brake Harrow*, *Vaux's patent Revolving Harrow*, *Biddell's extirpating Harrow*, *Fuller's Extirpator*, *Finlayson's Patent Harrow*, *Wilkie's Parallel Adjusting Brake*, and *Kirkwood's Grubber*, of which he says—

> "*Kirkwood's Grubber.*--The leverage that is obtained by pressing on the handles or stilts of the machine, whether in action or at rest, is so simple and yet so powerful in its effect as to regulate the depth of the tines to the greatest nicety; or, in cases of obstruction, to throw them out of work altogether. It is an admirable implement, and well deserving the high commendation which is generally bestowed on it, although inferior in the form of its teeth to either of the previous implements.

Biddell's Scarifier and *Lord Ducie's Cultivator*—of the two latter implements there is a very interesting account, and a comparison of their respective merits; this comparison we would by all means recommend to those about to purchase either of the implements—to such, indeed, it is worth the whole cost of the book.

The IV section of the work is devoted to *Rollers*, of these he enumerates the following: *Booth's Rollers*, *Heavy Roller, with three cylinders*, *Double-jointed Barley Roller*, *Drill Roller*, *Seam Presser, and Crosskill's Patent Clod Crusher*. The last of these has been recently improved by Mr. Crosskill, who has taken out a patent for it—it is really a valuable implement to the heavy land farmer.

Our author's V section is devoted to *Drills*. These implements, we are satisfied, are to be materially improved; though upon fine mouldy soil, free from stones, great beauty and regularity of work may be obtained, yet upon the general run of arable lands the present forms of drills for general purposes are too complex, and liable therefore to be out of order. Mr. Ransome, however, enumerates the following: *Cooke's Drill, Smyth's Suffolk Corn and Manure, Garrett's Patent, for general purposes, Bedfordshire, Lord Western's patent, Grounsell's patent Drop, Hornsby's do.*, and the *Dibbling Machines* of Thomas Wedlake, of Hornchurch, and the late Rev. W. L. Rham, Rector of Winkfield, Berks.

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The Veterinarian, April. London: Longman and Co.

We congratulate the practitioners of veterinary art upon the attainment of their charter, and we wish the profession and every individual member of it all the success their valuable labours so well deserve. It is not the mere adventitious rank, which a "*Recognised Profession*," or the mere breath of the Queen's lips, or a scratch of her pen, can confer upon such men as Youatt and Percival, and Karkeek and Dick, and the host of other really scientific men the profession possesses, which such men yearn for, they, as men of science, will take rank independently of any college—they need not the trappings of scholastic dignities, nor the parade, the too often 'empty parade' of collegiate honours; they are honoured in the useful lives they lead, and in the skill and learning they possess, to which the world will, at any time, admit their claims quite as readily as a board of examiners. However, for the mass of the profession—for the undistinguished, by individual exertion and skill, as well as for the student at his outset in life, the college and its examinations and accompanying honors when earned, are no doubt desirable, and we once again wish the "Royal College of Veterinary Surgeons" all possible success.

The number of the *Veterinarian* before us sets out at length the Royal Charter of incorporation just obtained.

The number also contains an excellent contribution to Zoological Pathology, by Dr. Mercer, of Edinburgh, a paper by Mr. W. A. Cartwright, V. S., Whitchurch, Salop, "*On a case of hereditary Phthis and tubercles on the pia mater, or Tu Arachnoides of a bull-calf*," and Mr. K keek's very excellent lecture before members of the St. Austell's Farm Club, a report of which, from a Corn paper, was intended for our columns at time of its delivery—the paper, howe became unintentionally mixed up with rubbish of our office, and was a loss us as well as our readers; we can therefore, now do better than refer t to the pages of the work before us.

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An Essay on Artificial and other Man By W. F. Karkeek. (*Second notice.*)

(*Continued from page* 60.)

"The next experiment to which I w direct your attention was a trial between nd guano; also made by Mr. Rope, of gothnan.

"Upon a field of five acres in Swede tur which was of a very inferior description, va at 10s. per acre, a mixture of 15 loads of f yard dung, and 5 loads of calcareous sea (the coralline deposit found in Falmouth bour,) and 22 loads of soil taken from ditches, was laid per statute acre—at a including carriage and spreading, &c., of £ Three acres dressed in this manner were sured out,—one of them having 2½ cwt guano, and another 2½ quarters bone dust e The seed was of the purple top variety, was drilled in at 18 inches distance, on the of June. The difference between the acre w was simply dressed with the dung, sand, earth, compared with the two acres dressed bone and guano, was as follows:—

Manures	Value of Manures per acre.	Weight of crop per acre.	Value of crop per acre, at 8s. per ton.	Differenc between cro manures	
				Profit.	L
	£. s. d.		£. s. d.	£. s. d.	£.
Dung, Sand, &c	4 2 0	7 tons.	2 16 0	....	1
Dung, Sand, &c	4 2 0				
2½ cwt. Guano.	1 14 0				
	5 16 0	22 tons.	8 16 0	3 0 0	....
Dung, Sand, &c	4 2 0				
2½ qrs. Bone.	3 0 6				
	7 2 6	25 tons.	10 0 0	2 17 6	....

"In this experiment, the advantage is decidedly in favour of bones, since there cannot be a doubt but that the next crop will derive a much greater benefit from them than from the guano. This experiment is chiefly valuable in proving that had it not been for the outlay in these manures, the crop would never have paid for the dung and sand.

"The next experiment was also a trial between bone and guano, giving the advantage to the latter. It was made by Mr. C. Parks, of Michell. The field was a wheat stubble, manured for that crop with a compost of dung, earth, and sand. When put into turnips, one part was manured with bone dust at the rate of 3 quarters per acre, the other part with guano at the rate of 2¾ cwt. per acre. The following calculation was made by selecting an average statute yard of turnips grown with each of these manures, and the result was as follows:—

Manures.	Cost of Manures per acre.			Produce per acre.				Value of crop at 8s per ton.			Difference between crop and manures.		
	£.	s.	d.	Ton.	cwt.	qr.	lb.	£.	s.	d.	£.	s.	d.
3 qrs. bone..	3	12	0	15	4	1	4	6	1	6	2	9	6
2¾ cwt guano	1	10	0	21	15	2	24	8	14	3	7	4	3

"I have made as few remarks as possible on the effect of the different manures which we have passed in review, leaving the experiments to speak for themselves; but in this last one, it must be understood that the land was of a heavy loamy character, which is more suitable to the use of guano than bones.

"The next experiment was one between bone dust, Peruvian guano, Potter's artificial guano, and bone dust and Peruvian guano mixed, instituted on a crop of Swedes, on Trelowarren estate, by Mr. Foot, the hind of Sir R. R. Vyvyan, Bart. The land is of a loamy description on a clay-slate subsoil, having a north-west aspect:—

Kinds of manures.	Quantity of manures per acre.	Price of manures per acre.			Weight of turnips per statute acre.		Price at 8s. per ton of crop per statute acre.			Difference betwn. manure & crop.		
		£	s.	d.	ton.	cwt.	£.	s.	d.	£	s.	d.
Bone dust ..	2½ qrs.	2	12	6	29	8	9	7	3	6	14	9
Peruvian guano......	350 lbs.	2	2	0	25	.	10	0	0	7	18	0
Potter's ditto	350 lbs.	2	9	0	29	.	8	16	0	6	7	0
Bone dust and Peruvian guano..	1¼ qrs. 175 lbs.	1 1	6 1	3 0	26	.	10	8	0	8	0	9

"From this experiment we see that the bone dust and guano mixed, gave the heaviest crop, and yielded the largest profit per acre.

"Ere I conclude this part of the subject with reference to guano, I should say that it proved itself a most valuable and cheap manure in Cornwall this last season. For corn crops, such as barley and oats, it was generally sown, either before or after the seed, at the rate of 2 cwt. per acre. For Swedes, it was usually applied from 2 to 3 cwt. per acre. In many instances, where this manure was drilled in with the turnip seed, from not being mixed with a sufficient quantity of earth, wood, or turf ashes, a very large portion of the crop was destroyed. This is occasioned by the large per centage of actual ammonia contained in the Peruvian guano,—for where the guano had been sown broad-cast, the crop was invariably successful, and superior to the drilled turnips. *I should say that in every case where it was drilled in with the seed, not less than a ton of earth or ashes should be mixed with each cwt. of guano, or the guano and ashes might be drilled in the land by itself, and the seed sown broadcast.* The plants would be certain to come up much stronger in the drills, and could be as easily hoed afterwards, as if the seed had been drilled in with the manure. I have heard of some instances of failure from another cause, viz., the impurity of the manure. This is very likely, for there cannot be a doubt that a plenty of inferior stuff will find its way into the market, particularly as, from its very recent introduction, the farmers can scarcely be considered judges of the real from the manufactured.

"I will next direct your attention to some artificial manures, which, previous to the introduction of guano, were very commonly employed by farmers as fertilizers for the turnip crop. These are Lance's carbon, Poittevin's, and Clark's composts, and the urate of the London Manure Company.

"The following experiment, instituted by J. H. Tremayne, Esq., of Heligan, and carefully conducted by Mr. Reynolds, the hind, in the year 1841, will give a tolerably just view of the powers of these artificial manures.

"The field selected for the experiment was a wheaten arish, with a soil not over rich in quality, and not at all qualified to produce an abundant turnip crop, as will be seen in the sequel, having a north-west aspect, and consisting of a heavy loam, resting on a subsoil of a fine-grain argillaceous schist. Having been prepared in the usual manner, four equable acres were selected, which were divided into half acres, and these thrown into ridges, one-half at 18 inches, and the other half at 27 inches distance. The seed was sown by means of a drill, which conveyed the manure along with it, sowing one ridge at a time. The following table will give the different manures used, and their results:—

Manures.	Width of drills.	Quantity per acre.	Cost of manure per acre including freight, &c.	Weight of Turnips per statute acre.	Value of crop at 8s. per ton.	Difference between crop and price of manures.	In favour of 27 or 18 inch Drills.
			£ s. d.	t. cwt.	£ s. d.	£ s. d.	
Caff—a mixture of fish refuse and earth mixd	27	20 tons	2 10 0	9 16	3 18 4	1 8 4	
—2 parts of fish to 20 pts. of earth	18	do.	2 10 0	9 11	3 16 4	1 6 4	
				0 5		0 2 0	27 in.
Rich Dung..	27	20 tons	4 0 0	12 18	5 3 2	1 3 2	
Ditto	18	do.	4 0 0	13 12	5 8 9	1 8 9	
				0 14		0 5 7	18 in.
Bone Dust..	27	2½ qrs.	3 0 0	15 1	6 0 5	3 0 5	
Ditto	18	do.	3 0 0	12 0	4 16 0	1 16 0	
				3 1		1 4 5	27 in.
Poittevin's Manure ..	27	30 bus.	3 11 0	11 17	4 14 9	1 3 9	
Ditto	18	do.	3 11 0	10 17	4 6 9	0 15 9	
				11 0		0 8 0	27 in.
Ammoniacal Compost..	27	20 bus.	3 15 0	7 4	2 17 7	0 17 5	Loss.
Ditto	18	do.	3 15 0	8 2	3 4 9	0 10 3	
				0 18		0 7 2	
Lance's Carbon	27	26 bus.	2 14 6	11 4	4 9 7	1 15 1	
Ditto	18	do.	2 14 6	10 9	4 3 7	1 9 1	
				0 15		0 6 0	27 in.
Urate	27	26 cwt.	4 16 0	7 7	2 18 9	1 17 3	Loss.
Ditto	18		4 16 0	10 0	4 0 0	0 16 0	
				2 13		0 1 3	
Clark's Compost......	18	26 bus.	3 5 0	11 6	4 10 4	1 5 4	18 in.

"The seed was sown on the 8th of June, and the weather at first was very unfavourable. About the 20th of June, the plants from Poittevin's, Lance's, Clark's, the Urate, and Dung, made their appearance, and were in rough leaf on the 28th; the three others lagging two days behind, and when they did rise, having a blue and stagnated appearance. The plants from Poittevin's, Lance's, Clark's, and Dung, were hoed on the 15th of July, not having a distinguishable appearance. The urate and bones were hoed on the 22nd, and the ammoniacal manure and "calf" on the 26th. From this period, the hand and horse hoe were frequently applied. By the latter part of August the bone had outstripped most of its competitors, which, *in the early part* of the race, had taken the lead. The "calf" turnips improved a little durin October and November, but to the great disa pointment of the neighbouring farmers an labourers, who anticipated great results fro this compost, they still lagged in the race, a you have seen in the previous table. The resul of this experiment, as regards the difference i the weight which the 18 bears to the 27-inc ridges, is rather puzzling, and I leave others t account for it. It was also considered that th land, being of a heavy loamy kind, would b ill-adapted for bone dust, and better adapted t the other manures; but the effect of the bone on the whole, in weight and expense, is decidedly in their favour.

"Another interesting experiment, which witnessed, among the many instituted in th year 1841, was the following one, by Mr Richard Doble, of Barteliver farm, in the paris of Probus, and which, for the correctness an care with which it was conducted, may also b depended on. The field is a free working soil but not light, on a dun colour slate, worth abou 30s. per acre per year, according to land let i this neighbourhood. It inclines towards th south, and is bounded on the west by Trewithe plantations. In this experiment, Lance's carbo took the lead at starting, and for six weeks wer considerably a-head, Clark's manure followin in the wake; but, after hoeing, the others cam quickly on, and, as the result has shown, wer decidedly the best crop. I recollect that wher the seed had fallen on a spot which was no manured, and there were several left for th purpose of trial, the turnips were not so larg as oranges.

Description and quantity of manures per acre.	Cost of manures, freight &c.	Weight of turnips 18 feet square.	Weight of turnips per statute acre.	Value of the crop per acre at 8s. per ton.	Diffe ence betw crop & m nure per acre.
1	£ s. d.	lbs.	t. c. q. lb	£ s. d.	£ s.
Wood and Coal ashes 1 qr.....	0 2 0				
Stable dung and earth 20 loads..	1 10 0				
Carting & mixing	0 10 0				
1½ qr. bone dust..	1 16 0				
½ qr. malt screening	0 5 0				
2	4 3 0	336	24 0 0 0	9 12 0	5 9
1½ qr. bone dust..	1 18 0				
Malt screening..	0 5 0				
3	2 3 0	281	20 1 1 20	8 0 6	5 17
3 qrs. bone dust..	3 12 0	287	20 10 0 0	8 4 0	4 12
4					
3 qrs. Lance's carbon	2 8 0	218	15 11 2 2	6 4 6	3 16
5					
3 qrs. Clark's compost..........	2 10 6	240	17 2 3 12	6 17 0	4 6

"Very considerable quantities of Lance's carbonised manure were used in this county about two or three years since, and, in justice to this manure, I should state that, in very many instances, it produced a much better crop of turnips than bone dust and at a less expense. On some farms it was used to a very great extent. Mr. Magor, of Coswarth, has successfully used it ever since its introduction, considering it to be a valuable manure for his soil. In many instances, I have seen from 18 to 20 tons, and sometimes as much as 25 tons, of Swedes per acre from the use of 24 bushels.

"The following two experiments were with manures of a different description. These were instituted by Sir Charles Lemon, Bart., of Carclew, in 1842 and 1843, as a top dressing for grass land. A portion of the park which had not been broken up for nearly 30 years, was set apart for this purpose, and the *twentieth part of an acre* marked out for each of the kinds of manure which were to be the subject of the experiment. The soil is a yellow loam, averaging from nine inches to a foot in depth; the situation open, but not exposed. The manures were severally applied on the 16th of March; the grass cut on the 25th of July, and the hay carefully weighed on the 27th. No rain fell between the time of cutting and weighing. The following table shews the result:—

Kind of manure.	Quantity used.	Price.		Produce.					
				Grass.			Hay.		
		s.	d.	c.	q.	lb	c.	q.	lb
1 Nitrate soda and water	11¼ lbs. to 50 gl.	2	0	3	3	5	1	3	0
2 Ditto sown dry..	11¼ lbs.	2	0	3	3	1	1	2	15
3 Ammonl. liquor..	8 gls. in 50 wtr.	0	2	3	2	1	1	1	23
4 Bones mixed with earth at the rate of 8 qrs. to the acre	1¼ bus. to a ld.	1	3	3	2	24	1	1	19
5 Sulphate of soda sown dry	11¼ lbs.	1	0	3	3	15	1	2	21
6 Do. and water ..	11½ to 50 gal...	1	0	4	0	16	1	3	9
7 Without manure..				4	1	24	2	0	0

"According to this experiment, the nitrate of soda produced 35 cwt. of hay; bone and earth, 29 cwt.; sulphate of soda, 39 cwt.; whilst, where no manures was applied, we have a produce of 40 cwt. to the acre. This is rather a strange anomaly, as regards the application of manures, and were I not certain that it was correct I should hesitate in giving publicity to it. But, although there appears to be no benefit derived from the application of those manures, to the hay crop, yet I learn from Mr. Booth, who conducted this experiment at Carclew, that where the bones and ammonical liquor were applied, the pasture is decidedly richer and more resorted to by the sheep. The coarse kinds of grass have given place to white clover, and in both instances a fine rich sward has been produced. The plots on which the nitrate and sulphate of soda were applied, had a darker colour than the rest, but it does not appear that there was any increase of hay in consequence. The dose was repeated this year, but without producing any visible difference in the pasture.

"Before we arrive at any practical conclusion on this singular anomaly, it would be desirable that the experiment be repeated on another portion of the park, with carefully noted conditions, and I would recommend that two undressed plots at least should be measured out, instead of one, and their relative produce ascertained as before, in order to prevent the possibility of a mistake arising from any difference in the soil, not observable to the eye, which is very likely to have been the case, in this experiment.

"The following are the results of a set of experiments made also at Carclew, in 1843, for the purpose of testing the relative merits of manures when applied as a top dressing to corn crops. The field selected for giving the whole a fair trial was one with a high open exposure, sloping to the south. The soil is a free light loam, not exceeding a foot in depth, on a yellow clayey subsoil mixed with spar. It had been well manured the previous season, and cropped with turnips. After these were removed, it was prepared and sown with barley in the latter part of April. The manures were applied on the 15th of May. In this case the *tenth part of an acre* was allowed for the experiment.

Kind of manure.	Quantity used.	Price.		Produce.		Average produce ℔ impl. acre.
				Straw.	Corn.	
		s.	d.	lbs.	lbs.	
1 Nitrate of Soda sown dry	33½ lbs	6	4	199	178	48 bushels.
2 Sulphate of soda	33½	3	0	264	215	45 bus 6 gl.
3 Guano	16½	2	0	280	252	50 do.
4 Sulphate of ammonia	22½	3	11	269	232	47 do. 4 gal
5 Stott's soluble manure	12	4	0	288	257	54 bushels.
6 Wash from farm yard..........	100 gal	....		300	256	52 do. 4 gal
7 Average of the field	......	....		233	200	40 do.

From this table it will be seen, that where the nitrate and sulphate of soda were used, the produce is less than from either of the other applications. From guano we have a large return, considering the small quantity of it used, averaging only 1½ cwt. per acre. The return from sulphate of ammonia is also large. This salt and No. 5 were forwarded to Sir C. Lemon by Mr. G. L. Stott, of Ashley-hill, near Bristol. The sulphate of ammonia is prepared from the refuse of gas works. No. 5 is probably manufactured in the same way, having a very strong smell of ammonia,—one pound to ten gallons of water is the proportion in which it was directed to be used. The return from it was greater than that of any of the others. It appears also from this experiment, that the sulphate of soda (which is the common *Glauber's salt)* proved to be nearly as powerful a fertilizer as the nitrate of soda. This experiment should be tested on other farms, since the sulphate of soda can be manufactured in our country at a very considerably less expense than the nitrate of soda which is obtained from South America, can be purchased for.

"I have repeatedly witnessed the effect of the nitrate of soda on different crops. In some instances it produced enormous yields; in other cases no perceptible effect was exhibited. At Mr. Gill's farm, in the parish of Kea, where it was employed on seeds at 1½ cwt. per acre, it produced about one ton of hay per acre more than on the other parts of the field. At Mr. Pearce's farm, proprietor of the Hotel, Truro, the nitrate was used to a very considerable extent, (about £50 worth this last season,) at the rate of 2½ cwt. per acre. Mr. Pearce calculates that it afforded him the same quantity of hay per acre as he usually obtained from a dressing of 30 loads of dung and earth mixed.

"The following experiment, made by Mr. Richard Doble of Probus, also shews that the nitrate had a very beneficial effect on the wheat crop. On the 20th of April, he sowed 70lbs. weight of nitrate of soda on half an acre of wheat; in about a fortnight, the effect of the nitrate could be perceived as far off as the field could be seen; the wheat grew considerably stronger and thicker on that part, and at harvest, the straw was full six inches higher. Mr Doble carefully cut half an acre of wheat adjoining for comparison, and the result was as follows:—

NITRATED WHEAT.				£.	s.	d.
60 Sheaves 1,456lbs. at 3d. each............				1	6	0
Straw 1,192lbs				0	10	6
19 bush. 1 gal. best wheat, at 7s 4d. per bush.				6	14	9
7 gallons seconds						
				8	11	3
NON-NITRATED						
36 Sheaves 857lbs.	£0	15	0			
Straw 940lbs........................	0	8	6			
14 bushels 1 gallon best wheat, at 7s. 4d.	5	7	3			
7 gallons seconds..................						
				6	10	9
Difference....				£2	0	6
Deduct value of Nitrate 70lbs. at £1. 1s. per cwt., the present price				0	13	1½
Profit........				£1	7	4½

"Nitrate of soda has chiefly been used as a top dressing for corn and grass crops. When it was first introduced, an experiment was made in a small way on Tregeagle and Golden estates, in Probus, for swedes, in 1841, wi
salt, mixing it with wood and turf asl
drilling it in with the seed at 1½ cwt. ,
and it had no perceivable effect; whilst
farm, the seat of J. S. Enys, Esq., wher
used in the same proportions, and fi
same parcel, for turnips, it produced as
crop as either bone or dung.

"Mr. Gill, of Menadews, also u
manure for turnips, at two cwt. per acr
broad-cast, and the crop was a fair one,
equal to turnips growing in the same fi
nured with bone, at the same cost per a

"Mr. George Mason, last March, trie
of soda against guano, as a top-dres
wheat. The land was prepared in th
manner with dung, sand, and earth, usin
20 loads of dung per acre. One-h
dressed with guano, at 2½ cwt. per acre,
other half with the nitrate at 2 cwt. p
At the harvesting, he could not disting
difference either in the weight of straw
The crop was an excellent one, being 54
per acre, and this, too, on a piece of lar
but one year previously from the Four
Common.

"From these experiments, made w
nitrate of soda, we learn that cases have
where it has failed to produce any a
effect; and others where it has proved
beneficial. Both the failure and the an
benefit derived from its use are deservin
tion, and it is probable that unless we
accurate analysis of the different soils
it has been tried, we shall not be able
any correct opinion as to the causes wl
pear to influence its success in one case o
in another. To some, an explanation
pear to be easily given, by supposing the
to be rich in soda, whilst the other was
in this substance; yet, in the case of
periment tried by Mr. Pearce, it prove
useful and profitable and it is scarcely
to suppose that land such as his, manu
has been, with stable dung in immense q
for more than 30 years, was not exc
rich in nitrogenised substances, as well
salts of potash and soda.

Gypsum, or sulphate of lime, appears t
on some soils, particularly in the gr
clover and the grasses, whilst on our cl
soils it has no visible effect whatever, a
I am aware of. It has been stated, th
sional failures may be attributed to
already possessing those earthy salts in
inent degree, but this is not the case he
our killas soil, in a natural state, scarc
tains any lime whatever. The followi
will give the reader a just idea of the c
composition of the slate soils in Cornw

ed by Professor Phillips, of the Museum of nomic Geology:—

	Red Clay Illogan Downs.	Yellow Clay Illogan Downs.	Clay from Nancekuke Downs.
......	69 0	61 2	60 4
ina ..	23 0	28 8	27 4
of iron	8 0	10 0	12 2
	100 0	100 0	100 0

In some other analyses which I have seen e 'wastes' of our county—particularly one by Professor Phillips for Sir Charles on, Bart., there are nearly the same che- proportions, having only what the chemists trace of sulphate of lime, so that its failure ot possibly be attributed to a superabun- already existing in the soil.

CONCLUSION.

n crossing the county of Cornwall, in st every direction, there are evident proofs at the 'wastes' might be made capable of ng, from the numerous small enclosures , here and there, have been brought into ation from neighbouring Commons. I recorded two instances only in the essay, may well stimulate the proprietors of 'wastes' to immediate exertion, by which y considerable number of acres might ly be made capable of yielding a propor- e amount of food to the inhabitants, a erating profit to the farmer, and a good ntage on the outlay invested in the im- ment.

a addition to this, I have related several es to shew where large returns have been from a moderate outlay in bone, guano, ther manures, as well as several instances ure—all of which will serve as a beacon n the experimentalist from striking on r rocks.

he farmer will also see from the manner ich many of the experiments have been cted, that in order to obtain a legitimate orrect account of the result of any which ay institute, whether for his own satis- n, or for the benefit of the public generally, h case he must become a laborious and nt collector of facts—weighing and mea- everything as he proceeds; and in every iment there should be one or two plots of field left unmanured, in order to obtain a verage of the unaided fertility of the land, by the application of expensive manure n easy matter to obtain large crops; but bject of cultivation is to obtain a remun- g profit for the outlay; and there can be ubt that the more scientifically the farmer eds, the more effectually will this object ined."

Letters on the Rules and Regulations of Agricultural Societies, in respect to the advantages to be derived from the offer of premiums, &c. By Agricola.

THOUGH referring in the main to the local societies, in the midst of which these letters were first written and published, there are many points contained in them for the consideration of the promoters of agricultural societies generally.

The author has on previous occasions placed upon record his opinions as to the means to be adopted for bettering the cultivation of the county, with which he is and has been for years connected. (*Vide* report to the Board of Agriculture, "*On the Agriculture of Cheshire*," printed in 1794.) One of the recommendations he there makes, in alluding to the premiums &c. of agricultural societies, has been carried out in various other parts of the kingdom, but not, that we are aware, of in his own county, viz., the establishment of "farms of actual experiment." We mention our author's previous writings merely to show that he is not giving publicity, in the pages before us, to any new and hastily formed opinions, but that he is reiterating the results of his observation made years ago, and is now only repeating objections which the march of improvement in agriculture has not yet altogether removed.

That much money is too often spent ill advisedly, not in agricultural societies alone, but in all others, where liberal contributions are made for the promotion of particular objects, we have been long aware; the promoters, contenting themselves with the duty of contributing their money, without, at the same time, giving their attention to the best means of attaining their common objects; the natural result is, that a small number of busy men, not always the best qualified for the task, take upon themselves the duty of arranging the mode in which the funds shall be appropriated; no wonder then that errors and inconsistencies arise, and that contributors fall away after a few years, when they have discovered how little good has been really effected within the range of their own observation.

Our author, in the letters before us, attacks, in the first place, “ *the premiums*” of agricultural societies, prefacing his remarks with the observation that unless an act (no matter how praiseworthy soever in itself,) shall be of such a nature as to encourage imitation it is not a fit subject for a premium, and then observes :—

“ Premiums that are not likely to occasion ‘imitation,’ and are known from experience not to have done so, are a waste of funds ; of these I will enumerate only a few. And first, as to

“ Premiums for best cultivated farms :—By whom are these premiums always gained? Are not the competitors persons where nothing is wanted as respects rents, buildings, confidence, or capital ? And if so, of what use in *common* practice, where improvement is most wanted, can these premiums be? even if accompanied with a statement by the successful claimants, of cost and profit, and all the particulars of the balance sheet.

“ Premiums for best fallows, best crops of wheat, turnips, &c. are all obtained by persons of a similar description. Every one knows the advantage of a good fallow, and that a good crop of any kind generally carries its own reward ; but to obtain a premium for a best crop, in competition, a sacrifice may be made to the prejudice of the claimant, by expense or neglect of other things, more than equivalent to the amount or advantage of any common premium.

“ Premiums for best cattle :—In the Highlands of Scotland, or any where else, where there is a well-established district breed, premiums are calculated to do, and no doubt have, done much good ; but in a dairy country, where the *bag*, and the produce of it, are the chief objects of attention, the *make* of the animal is a matter of minor importance, and premiums there can be of little, if any use. A beast best adapted to fatten is not often a good milker.”

As a rule, a well formed beast is a healthy animal, and though, in feeding animals it is extremely advisible to have as little bone as possible ; yet may not a healthy cow with small bone milk as well as one with large ?

“ Premiums for long servitude, bringing up the greatest number of legitimate children without parochial aid :—These are case wherever they occur, are *highly* des reward ; and it may seem uncharitabl natured to say a word against these pr but as they have not been known to imitation, nor are ever likely to do so, a waste of funds, and, *prospectively*, do

“ The insufficiency and failure of agr premiums, as usually offered, are mu easily detected than remedied. Perl failure has frequently arisen from a w proper basis. It is a *groundwork* whi to be most wanted. In districts lik Cheshire, where the soil is stiff and of moisture—surface and under-ground are objects of the very first importance proper attention were paid to these obje more improvement might probably be than ever yet has been or will be by agricultural premiums. But if landl not attend to their own interests, how reasonably expect tenants to do so for

“ The one has not only an immedia permanent interest in improvements nature, the other only a temporary one and that perhaps precarious. Ought n thing, therefore, that is wanted to be improvement in matters of drainage, and irrigation, to be *properly* done by t lord, and the tenant charged with an a rent, by a per centage on the amount o laid out—more or less, according to stances ?

“ It is the common practical far *generality of farmers* who want encour and improvement, and not the few—the men and amateur farmers—who are t successful candidates for premiums ; therefore, as the influence of example is a sweepstakes, and the more general th would answer every useful purpose. B out the assistance of capital and buil make the most of stock and produce, n sive or lasting improvement, as far as cu is concerned, will ever be induced by p —still I think that these societies m great use.”

We propose to resume our notice pamphlet next month.

◆

New Books.—The Economy of Wa nures, by John Hannam, fc., 8vo., cl. chinson on the Drainage of Land, 8v Two Lectures on the theory of Agricul on Farming, as practised in Cheshire, b Bernays.

ɔʀ **May.**—1, Bridgnorth, Reading,
Neston, Stockport, Tarporley; 2,
ȷ, Oxford, Coventry, Colnbrk.; 6,
Lewes, Southampton, Llanerchy-
clesfield; 7, Stafford; 9, Swaff., B.
11, Blackburn; 14, Woodb., Thet-
:ldswell, Over; 17, Ashford, Hol-
Ipswich, Leek; 20, Swindon, Wick-
ring, Ashbo., L. Buzz.; 22, Corwen;
ıble; 24, Corwen; 28, Botley; 30,
hester; 31, Bingham, Talgarth.

MANURES.

d are the latest prices of several sorts
—
16s. per qr.
Bone, 15s. per qr.
łuano, £8. per ton. 15s. per cwt.
's. to 12s. per cwt., according to
,
, £6. to £6. 10s. per ton
, £6. per ton
t the water side, 32s. 6d. per ton;
ınd housed, 38s. to 42s. per ton.,
Soda, 15s. 0d. (duty pd.) per cwt.
tash (saltpetre) 26s. per cwt.
a for Turnip Fly 10s. 6d. per packet,
t for three acres.
Ammonia, 24s. per cwt.
Lime, 12s. per cwt.
£3. 12s. 6d. per hhd. sufficient for
:res.
:8s. and 42s. per cwt.

The Markets.

ıand for. Wheat *at Naples is dimin-*
d though small quantities have been
ı some of the European ports on French
e may consider the general demand as
and though prices have not yet mate-
ded in this country, yet we contemplate
reduction when those spring cargoes
ıd which are already reported as load-
their way hither.
Y *is now becoming a scarce article in*
:ts, and when the seeding is entirely
ıt little will be to be accounted for.
ıre still in free demand, and prices are
tained.
me may be said of Beans.
ınd Mutton *are on the advance. Prime*
at Smithfield have exceeded the figure
:ar.
is a demand for Wools *which we trust*
ıaintained until after the ensuing clip.
are quoted as follows:—

Pockets	£7 0	to	£9	0
x Pockets......	6	2	„	6	10
ester	6	6	„	6	10

LONDON, April 22.

		Per Qr.	
Wheat, Essex and Kent, new, red		56	60
White................	58	60	64
Irish................		50	54
White		52	58
Rye, old		30	36
New		36	—
Barley, Grinding		28	30
Malting		32	34
Chevalier............		34	36
Irish................		28	32
Bere................		26	28
Malt, Suffolk and Norfolk		60	62
Brown		56	58
Kingston and Ware		60	63
Chevalier..............		60	63
Oats, Yorksh. & Lincolnsh., feed		22	23
Potatoe................		22	25
Youghall and Cork black..		19	20
Cork, white		19	20
Dublin		18	19
Waterford, white		18	19
Black		19	20
Scotch feed		20	22
Potatoe................		23	25
Limerick	20	21	23
Londonderry		20	21
Beans, Tick, new		28	34
Old, small		34	38
Peas, Grey		32	33
Maple		30	32
White		30	33
Boilers		32	36

Seed, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..41
Mustard, White...... 7 10
Brown .... 8 11 per bush.

Flour, Town-made — 50
Suffolk.... — 42 per sk. of 280 lbs.
Stockton and Norfolk .... — 42

FOREIGN GRAIN AND FLOUR IN BOND.

Wheat, Dantzic	40	44
Hamburgh..............	40	42
Rostock	40	42
Barley	20	—
Oats, Brew	12	16
Feed	11	15
Beans	15	19
Peas	23	25
Flour, American, per barrel	21	23
Baltic	21	23

LONDON AVERAGES.

			£.	s.	d.
Wheat	3930	qrs.	2	16	3
Barley	5569		1	13	8
Oats	19757		1	0	3
Rye	35		1	12	0
Beans	1417		1	8	9
Peas	298		1	10	

SEED MARKET.

	s.		s.
Canary, per qr.	51	to	54
Carraway, per cwt.	57	to	62
Clover, red, English	56	to	70
„ „ Foreign	54	to	73
„ white, English	86	to	116
„ „ Foreign	56	to	116
Coriander	15	to	20
Hempseed, per last	35	to	28
Linseed Cakes, Eng. p. 1000	£9 10s.	to	£10 0
„ „ Foreign, p. ton	£5	to	£6 10
Mustard, white, per bushel	8	to	10
„ superfine „	6	to	8
„ brown „	12	to	18
Rapeseed, English, per last	£25	to	26
Tares, English, spring p. bushel	4	to	5
Foreign „ „ „	3	to	5

LIVERPOOL, April 23.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℔ 70lbs.	8	4	8	9
Ditto, red	8	0	8	3
Irish white, new	7	9	8	2
Ditto, red	7	6	7	9
Oats, Eng. and Scotch, ℔ 45lbs.	2	8	3	0
Welsh	2	6	2	7
Irish, new, best mealing	2	7	2	8½
Barley, English, per imp. qr.	32	0	35	0
Foreign, per 60lbs.	4	3	4	8
Irish, Scotch, and Manx, per 60lbs.	4	2	4	6
Feeding	3	10	4	2
Rye, per imp. qr.	28	0	31	0
Beans, English, per imp. qr.	33	0	36	0
Irish, &c.	31	0	34	0
Foreign	33	0	35	0
Egyptian, per 480lbs.	29	0	30	0
Peas, English, per imp. qr.	36	0	40	0
Foreign	35	0	42	0
Malt, per imp. qr., fine	60	0	63	0
Flour, English, per 280lbs.	41	0	43	0
Irish, extra-fine	40	0	42	0
Foreign, duty-paid, per 190lbs., U.S.	31	0	31	6
Canadian	30	0	31	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	21	0	21	6
Irish	20	6	21	0
Indian Corn, per 480lbs.	35	0	39	0

WAKEFIELD, April 19.

There are only moderate arrivals of Grain this week; the Wheat trade is rather heavy, but generally last currency is supported; in a few cases, however, inferior was sold at 1s. per qr. less. The Barley season is now nearly over, and prices are rather drooping. In Beans, Oats, and Shelling, a moderate business doing, but prices unaltered.

CHESTER, April 20.

	s.	d.
Wheat, white, 75lbs.	0	0
Ditto, red	8	6
Oats, 46lbs., old	2	9
Ditto, for seed	3	0
Grinding Barley, per 60lbs.	4	4
Malting ditto, 38 qts.	5	0
Ditto, inferior	0	0
Beans, new, per 80lbs.	5	9
Ditto, old	0	0

DUBLIN CORN EXCHANGE—Apr

	s.	d.	
Wheat, white (per brl.)	30	0	to
„ red do.	26	0	to
„ inferior, do.	00	0	to
Oats, feeding, new	10	0	to
Barley	17	0	to
Flour, first (per cwt.)	19	0	to
„ second do.	17	0	to
„ inferior do.	13	0	to
„ third do.	7	0	to
Oatmeal do.	10	0	to

Cattle Markets.

LONDON, SMITHFIELD.

April 22, 1844.

	℔ st. of		
	s.	d.	
Inferior coarse beasts	2	4	to
Second quality do.	2	10	to
Prime large Oxen	3	4	to
Prime Scots, &c.	3	10	to
Coarse and inferior Sheep	2	8	to
Second quality do.	3	4	to
Prime coarse woolled do.	3	6	to
Prime Southdown do.	3	10	to
Large coarse Calves	3	4	to
Prime small ditto	4	2	to
Suckling Calves	0	0	to
Large Hogs	3	0	to
Neat small Porkers	3	10	to
Pigs, quarter old store, each	0	0	to

LIVERPOOL, April 22.

We have had a smaller supply of Catt market to-day than of late; prices in adv from last week. Beef, 5½d. to 6d., Mı 6½d. to 7d.

CATTLE IMPORTED INTO LIVERPOO

From the 15th to the 22nd April.

Cows	Calves	Sheep	Lambs	Pigs	H
1384	0	2885	367	3775	

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

MAY—1844.

THE EDUCATION OF FARMERS.

Public attention seems at length roused to this very important question. It is one involving not merely the condition of the tenant farmers of England as a class, but the well-being of the whole population. The safety of the empire and the security and comforts of the people are more immediate dependant upon it, than most people are apt to imagine from the mere cursory glance they have hitherto felt it necessary to bestow upon it.

In all ages of the world and in all parts of it a fruitful soil and a genial climate have ever been considered the great national desiderata, and doubtless next to the possession of a free constitutional government the fruitfulness of the soil is "the one thing needful." This being so, all which tends in the remotest degree to add fertility to the soil, and to extend our knowledge of the means to be adopted for increasing the value of its products, is of essential importance, and right glad are we to see that this is beginning to be felt and acknowledged; for being once admitted—once clearly understood—that it is desirable to extend our knowledge upon agricultural subjects, and places of learning will be at once established. We have them not at present, and why?—because it has hitherto been the custom to pretend that no one could teach us—that "the wisdom of our ancestors" had cleared up every doubt—tried every experiment, and fully shewn us what should be done and what omitted. Now, however, that the light of science has broken upon us we can see how really little we know of the operations of nature, and how much we have to learn of those causes which are ever at work in the reproduction from her decaying elements of new sources of life.

The British public has only to discover a public want and an abundant supply is immediately afforded; of this, and as bearing immediately upon the question before us, we may instance the proprietary and collegiate schools, which, within the last ten years, have been established in the great manufacturing and commercial towns. A want of eligible places of instruction was apparent, and at once those great classes of our industrial community set about supplying it: we may quote for example the Mechanics' Institute and the Collegiate Institute in Liverpool. The schools of the former were, we believe, erected, as the name imports, for the purpose of affording to the sons of mechanics, a better education than they had heretofore been able to obtain. It has now been found, after the comparatively few years the schools have been established, that the instruction imparted in them is of so excellent a kind, that not the sons of mechanics only, but those of persons filling a superior station in society are reaping the advantages to be derived from them, and to such a length has this been carried, that serious thoughts have been entertained of establishing in the town another institute of the kind, under arrangements which shall ensure to the mechanic classes *alone* the advantages thus afforded them, and which shall prevent the intrusion of boys not strictly the sons of mechanics. The latter institution is of recent origin, having been erected within the last   years. It contains within its capacious walls three schools, viz., the upper, middle, and lower schools, and is able, therefore, to meet the wants of every class of the community. A printed circular, issued by the authorities of the college, now lies before us—from which it appears, that in addition to the principal and two vice principals, there are upwards of twenty professors and tutors. That the terms for the upper school are 20 guineas per annum, except to the son, brother, or nephew of a donor of £100, who pays but 16 guineas. That for the middle school the terms are ten guineas, except to the son, brother, or nephew of a donor of £50, who pays eight guineas, and the terms to the lower school are three guineas per annum. Courses of lectures are regularly delivered by the professors attached to the institution, as well as by other eminent teachers; and we are much gratified to find that a course of lectures on Agricultural Chemistry has just been concluded by Dr. Brett, the professor of chemistry to the institution.

Schools of the same kind have been established with similar success in most of the large towns. Some are entirely upon the proprietary plan, others, as in the instances we have quoted, are established by subscription; but in all, pupils representing *the* subscribers or proprietors have trifling pecuniary advantages, and all are made t depend for success upon the eminence o the teachers.

This is the true and indeed the only road to success. Why cannot it be followed then by those whose pursuits lie entirely in the country?—why cannot we establish schools, as in the Liverpool Collegiate Institution, which shall meet the wants of all classes of the people? We have only to annex an example farm to our school, to be cultivated as at Templemoyle in Ireland, by the *foundation* scholars, as it were, leaving "the opulents" to take a turn at the manual labour or not, as their health or the wishes of parents or guardians may direct, and by the extra fees paid by them to assist in affording 'the foundation boys' the advantages of a superior education.

Now if the Royal Agricultural Society of England, on its advent to any particular one of the five great districts, into which England and Wales have been divided by the council, were to set about the establishment of such a school, and to appropriate for that purpose the entire cost of the great pavilion and the dinner, and all which relates to that most uncomfortable feed, i would leave behind it traces of its visit which would each year become more strongly defined, and which would confer upon British Agriculture a boon greater than was ever yet conferred upon any class or interest in this or any other country since the munificent foundations of Edward VI.

With a view to place before the counci of the Royal Society and our readers generally, all the information which can be collected bearing upon this subject, we respectfully call upon such of our friends a may have given their attention in any degree to the means to be adopted for affording facilities in the education of ou farmers' sons, and others to whom a residence in private schools or in towns is considered objectionable, to forward us thei opinions, and to lend us their aid on this most important subject, to which we will again recur in our next.

ON WEEDING.

There is no employment of the farmer more important than the complete eradication of weeds: his tillage may be effectual —his manuring according to the most approved rules of science—he may practice every other art of good husbandry with the view to ensure a return; but if his weeding be carelessly or ineffectually performed, his tillage and his manuring are hindrances to his success, acting as they do as so many aids to the destruction of his crop; for the same causes which operate to produce an abundance of useful vegetation will tend also to produce a still more plentiful supply of weeds; as the weeds being indigenous to the soil in which they spring, we may be assured that any nourishing or stimulating application to that soil will further increase its production of indigenous plants—this consideration shews how highly important it is to remove those plants from the soil which may become injurious to the crop.

Now the most effectual way to do this is the object of my present paper. Weeds of various kinds, like all other plants, are propagated naturally at different seasons; for, as we have spring and autumnal grasses, and a different vegetation for each of those seasons, so we have weeds peculiar to them; and though farmers are not as well acquainted with the weeds of the latter as of the former season, because they are in a great measure destroyed by the crop, yet they may rely upon their existence, which is sufficiently proved whenever a failing crop, from any cause, shall afford them an opportunity of gaining strength and vigour. And from this it will be at once seen that much of the cleanliness of a soil depends upon the strength and luxuriance of the crops grown upon it. Spring weeds are of rapid growth, and soon *get a-head of young* corn or beans (where they have been sown on foul land) to their manifest destruction; they cannot, therefore, be removed too early or too completely:—for this reason, as soon as my broadcast spring-corn has attained a tolerable braird, say four or five inches high, I invariably have it run through by women and children, with light narrow scuffles, the iron heads of which are about 2 inches or 2½ inches broad at the edge, and about 3 inches or 3½ inches long, these screwed into the end of an iron bound handle of four feet long, form excellent implements for removing not only such weeds as I have described, but also many which attain maturity in autumn; growing to a considerable height with the crop, and distributing their seeds; such as thistles and others, which though at that time young, are destroyed by being cut off just beneath the surface of the soil.

This work with me is very rapidly performed in the following manner:—one person upon each bout or ridge passes along, looking carefully amongst the young plants for weeds, and inserting the edge of the tool immediately beneath the soil and against the root of the weed, giving it a a sharp thrust forward, which cuts it off; it is then, by a jerk of the arm thrown on one side and left to die. The cost of this work is so light, that if the season be very forcing I repeat it again before the grain attains a height likely to prevent the employment of women and children. There is this advantage attending it in addition to the cleanliness of the land, viz., that the removal of the weeds, whilst the crop is young, very much promotes its growth by not only taking away an extra demand upon the soil, but where it may happen that the weeds are growing thick, by affording air to the plants.

The cost of weeding is very much reduced by a timely application of the broadshare scuffle to fallows and stubbles—the *latter* are particularly benefited by it. If after an early harvest a growing season comes on, autumnal weeds obtain a great ascendancy—couch or quetch grass flourishes luxuriantly, and the richer your soil the more numerous your enemies; with the broad-share plough, however, a single horse will go over a considerable space of ground in a day, and one hot day will give most of the weeds their *quietus*. Harrows may be passed over the ground in addition, which will effectually prevent their growing again. Cleansing crops, such as turnips, potatoes, or spring vetches, are great aids to the destruction of weeds; but with these the hand and horse hoe and the scuffle must be continually at work in a growing season. All that can be done, however, will avail nothing—all the labour, no matter to what extent, will be thrown away if rough edge banks and pit sides and the sides of roads are allowed to grow an abundant crop of weeds, which seeding without interruption, annually provide fresh labour not only for your own people, but for your neighbours.

Much might be written upon the subject of the various weeds, descriptive of their kinds, habits, and properties, but I have already written more perhaps than your readers will thank me for, upon a subject so familiar to all of them; yet it is a subject, as I before observed, as important to the farmer, and as industriously to be attended to by him, as either tillage or manuring. Mr. Rawstorne, in his work on *Lancashire Farming*, noticed by you in a previous number, places weeding after thorough draining and manuring; now, in my humble opinion, weeding is an operation of husbandry second to neither of these, and as evidence of good farming I would rather at any time see *clean* land than *rich* land. B.

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CULTIVATION OF WASTE LAND.

I looked over your number for April and the present month with some anxiety, hoping to see a reply from your correspondent, *"E. J. L." of* Bagshot, to the letter
of " A Lothian Farmer," which ap
in your February number. I shoul
greatly obliged if you would call "E.J
attention to the letter alluded to, an
assure you there are others besid
Lothian Farmer" who are very de
of an answer to the latter's query.

Could any of your correspondents i
me if " Cannock Heath," an extensiv
of waste land in Staffordshire, is to b
on lease for lives or years?—F. R.
garth, near Chirk, May 16.

◆

THE TURNIP-FLY.

Mr. Jas. Sherring, farm-bailiff to Mr
ning, Frome-house, Dorchester, Dorse
municated recently to the council of the
Agricultural Society the following for th
truction of the turnip-fly:—" A great de
been published, and many experiments t
prevent that ravenous of all other insec
fly, from devouring that valuable root, the
After 20 years' experience with the g
success, I beg to submit to your notice
lowing recipe:—A month, at least, b
begin sowing my turnips, I purchase the
ent sorts of seeds I may reqnire, I
vessels for the reception of such, adding t
20lbs. of seed half a pint of linseed-oil,
care to have it well mixed; I add 1lb.
flour of sulphur every morning; I h
whole rubbed between the hands to get t
in a proper state for drilling; the drillm
be apprized of what seed he has to us
will not drill a sufficient quantity, as the
will choke the cups; this, of course, r
looked to. As I before stated, I have p
this experiment for the last twenty year
out a single failure, and I believe I ca
say without losing a plant. The ear
of last season the fly made great rav
some parts of this country, but not or
perceive in a field of my employers.
benefit of those of my agricultural frie
may be inclined to try the experiment, I
same before your most honourable societ
ing it may be tried with the greatest suc

PIPE TILES.

Conflicting opinions prevail as to the efficacy of these tiles. At a late meeting of the council of the Royal Agricultural Society of England, a statement was read from Mr. **Read**, of the Regent's Circus Piccadilly, connected with the cylindric tiles of small bore, referred to in various portions of the "Journal" of the Society: —"In consequence of numerous applications from gentlemen respecting the efficiency of the small pipe tile for surface-draining of clay lands, and whether the Tweeddale or horse-shoe tiles could be made with the new pipe-tile machine; in order to answer these questions satisfactorily to myself, in the beginning of March last I went through the counties of Surrey, Sussex, and the Weald of Kent, for the opinion of my old experienced draining companions, during the last 40 years. I have the satisfaction to find they have proved that the tiles of one inch bore are sufficient if properly laid, and a free passage for the water at the end of the drain. Nay, more; some of the most experienced practical men are of opinion that a still further reduction in the size of the tile may yet be made. It is well known that the greater the declivity, the more rapidly the water will pass off. But there is a great portion of land nearly or quite level —as, for instance, the valley of the Medway, in Kent (and in almost every county in the kingdom;) this land is of a deep, waxy loam, two or three feet deep, which, I have been told, cannot be drained; but I have found no difficulty in draining such land, where the channels could be kept open at the end of the ditches. If the drains were three feet deep and two rods apart, there would be three feet fall from the surface to the bottom of each drain in one rod from the centre between them. In such situations the telescope tiles may be used with good effect; for instance, suppose a field, 40 rods long, the upper end, or the ten rods laid down with No. 4 tiles, of smallest bore, can receive but one-fourth of the water that must pass through at the lower end, or the ten rods of No. 1 tiles of largest bore. The pipe-tiles made by Mr Clayton's new machine may be *all brought into use* in the same field, they may also be placed in half the compass in the kiln and carriage, and burnt with half the expense of fuel, &c. These pipe-tiles are all made with separate dies, any size of which may be had, so as to give every person a choice of the size he prefers for his own use."—**Mr. Woodward** stated that, with him the cylindric form of tile had not answered in Worcestershire, where he had drained 1,000 acres up every furrow with tiles of that shape, and two or three inches bore: the drains becoming stopped up, as he supposed, from the loose dust being washed by storms down the fissures, where the ground had cracked, into the drains below, where a puddle accumulated which the force of the current was eventually insufficient to overcome.—**Mr. Slaney** had employed the small bore cylindric tile with signal success on his estate in Shropshire. His pipe-tiles varied from two and a-half to one and a-half inches in width, and had run quite clear after two or three years' use. He believed that a great deal depended upon the mode of filling in the drains, and referred to the papers in the Society's Journal on that point. By allowing the clay to crack, and then filling in with a proper material, permeable to the water, he conceived that the finest natural sieve was obtained to prevent further stoppage. His mode was to cut the drains three feet deep, and cover them over with the clay to the depth of about three inches; allowing such bed of clay to crack into fissures before proceeding further. When the clay had cracked he then filled in the drains as he had just stated. He had employed the draining plough introduced by Mr. Law Hodges in the Weald of Kent, with great success. Colonel Challoner thought green sod turf formed the best material for filling in drains: it was not, however, always at hand. He hoped at some future time the subject of draining sandy soil, to which he had on a former occasion called the attention of the council, would engage the serious consideration of the Society He considered that part of the general question of draining to be the one, of the present time, the least understood, and to which practical attention had not yet been sufficiently drawn. We were well informed on every point connected with strong land draining, but knew nothing of the draining of sandy land.

At the following meeting, Mr. Parkes produced some specimens of small cylindric pipes for drains, and desired to address a few remarks to the council on the observances necessary to ensure complete success in their use. In all arts there were successful and unsuccessful operators, and failure was usually traceable to some neglect of necessary conditions or precautions, when the many succeeded and the few failed. In the isolated accounts he had heard or read of ill success with pipe tiles, he found that sufficient regard had not been paid to the proper form and dimensions of the excavation which was to receive them. It appeared, in these cases, that a perpendicular ditch (or nearly so) had been generally dug, many inches broad at bottom, to receive a pipe of small diameter; whereas, in Kent, and in the other counties which gave birth to this system, and where it had hitherto been most used, every one knew that the bottom of the drain should be formed of such size that the pipe may fit and fill it. The proper section of the trench was a wedge, being about fourteen inches broad at top, tapering down to the diameter of the pipe at bottom, whatever might be the depth. The bottom was cleared out by a scope drawn towards the workman, having the same diameter, or nearly so, as the external diameter of the pipe. The particular tools used for forming the trench had already been described in the Society's Journal (Vol. iv. p. 28.) A series of pipes thus laid could not be disturbed, but there was nothing to ensure a true unbroken line of pipes, if they were laid in a trench of larger dimensions than themselves; and hence failure by stoppage would certainly arise. After diligent and extensive enquiry he had not heard of a single pipe-drain failing, in any respect, in the districts where this system of drainage has established itself; nor could he see any valid reason to object to it. The use of inch-bore pipes was rapidly extending, and he believed it to be the best and cheapest practice known. He had been enabled to demonstrate, in the most satisfactory manner, that an inch-bore pipe far more than sufficed to receive and carry off the water of rain, according to the usual system of parallel drains; these experiments would appear in the forthcoming Journal. He would now advert to an occasional cause of failure incidental to drains in clay soils, which he conceived to be attributable chiefly to insufficiency of depth. Clay is a substance which may be said never to be at rest; it shrinks and swells according to its state of wetness or dryness; a mass of clay soil *is, therefore, in continual* movement. In addition it was well known that clays ca
drained through the instrumentality
produced by their drying. If a drain c
be placed too near the surface, and t
descend below it, such a line of drain
liable to derangement, particularly i
unequal tenacity, from the contractio
pansion of the bottom or floor, arisin
varying state of wetness or dryness. I
known to builders that the foundati
house in clay should be laid at a dept
than the reach of the cracks, or at lea
as their usual penetration. The force
sion in clay, and of subsidence from co
was well known to produce fissures an
buildings. It was enjoined in old tr
building, and he found it to be the
about London, to sink foundations in
feet below the surface, and to drain th
that level. He considered that ag
drains two feet, or even two feet six in
in clays, were subject to derangement,
to stoppage, from this cause alone,
their depth should not be less than t
or from that to four feet, where an out
be obtained. Deep drainage in all
also consistent with economy of outla
may be placed further asunder, of whi
given several instances in Kentish pra
now adduced others. He earnestly
the Members of the Society, who
draining their farms, to reflect well o
vantages of deep over shallow drainag
persons had beneficially drained la
again to a greater depth, which had
stantially drained two feet, and even tw
inches deep, 30 to 40 years since. A
continuous good action, he believed
drains would be much more durable t
low ones, as they were removed belo
bance from the pressure of horses,
implements. Also that deep drains
liable to choke than shallow ones, as
reached them better filtrated. He was
that the sharp wedge-shaped form of
of the trench in which pipe-drains
was eminently conducive to their dura
the little pipe at the bottom was the
tected from undue superincumbent
The water entered such drains at th
the floor in a thoroughly filtered state
velocity of the current kept the line o
all times clean; nor could any ver
them. He had heard of, or read, a
that the floors of drains in clay soil
soft, that tiles sunk in them, or that t
stuff was protruded upwards and cho
It was likely this might occur when
used without soles. It did not ha
pipe-drains. The opinion, indeed,

Kent, that the floors of pipe-drains are drier and firmer than other parts of the field at the same depth. He had no doubt of the truth of this opinion, and it was confirmed by experiment as well as observation. It appeared that, if a pipe of 1 in. bore, 12 in. long, and a ¼ inch thick, were hermetically closed at each end, and placed in water just covering it, it would become full of water by absorption in about five hours; and if hung up horizontally, it would let all the water pass out of it in about the same time. This experiment was first communicated to Mr. Parkes by Mr. Putland, of Saylherst, Sussex; and he had repeated it with nearly similar results. This fact, which is in strict accordance with the known porosity of unglazed earthenware, showed, that after the free water of rain had permeated a soil and passed off through a drain, the pipes would still continue to act as absorbers of moisture, to some extent, from the earth in immediate contact with them; by which means, and in consequence of the indraught of air through the drain, it was reasonable to conclude that the earth adjacent to the pipes would become somewhat drier and harder after a cessation of rain than the more distant parts. This was an additional reason with him for the preference he had always given to tiles rather than to broken stones, or any other materials which filled a drain, as a free circulation of air was thereby better established; and it must be recollected that a drain served the double purpose of a conduit of water out of the soil and of air into it, the latter function being, perhaps, quite as important as the former. In answer to inquiries from several members respecting the adaptation of small pipes to the drainage of soft soils and sands, Mr. Parkes showed, that by inserting a small pipe into a larger one (nearly fitting) for about a third of its length, or four inches, a perfect continuity, or chain of pipe, would be formed, which could never sink. It was well known that some of the most plastic and pure clays were troubled with what he might term faults —*i. e.*, sand-beds occurred. He knew of such at Mr. Handley's and other places, and in them the ordinary tile-stones, wood &c., would sink, and the drain was thus marred. He would apply this arrangement of pipes as a perfect remedy in such spots, and even in much more unsound and troublesome bottoms; but it was clearly impossible to prescribe the exact mode of proceeding in every difficulty as the particular case must be inspected in order to deal with it in the best manner.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.—At a meeting of the council on the 1st ult., it was determined that the Annual Country Meeting for 1845 should be held at Shrewsbury.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

AT the last monthly meeting of the present session, held in the Society's Museum, Mr. Dewar read an essay by Mr. John Taylor, farm-overseer at Corsietown, near Huntly, on the comparative merits of reaping corn with the scythe and sickle. Mr. Taylor first considers the comparative merits of the implements in reference to the processes of binding, winning, carrying, stacking, and thrashing the crop. In regard to binding, a man can bind and stook 1500 sheaves, cut by the scythe in ten hours, as easily as he can bind 1200 sheaves cut with the smooth or serrated sickle; the chief reason for the difference being found in the circumstance of the binder to the mower having his work straight before him without having to move from one ridge to another. It is allowed on all hands, as remarked by Mr Taylor, that mown sheaves win in about one-fourth less time, that is, in 9 days, instead of twelve, than those cut with the sickle, though there is no perceptible difference in winning between grain cut with the smooth and the toothed sickles. As to leading and stacking, mown sheaves are closer in the head than shorn, and, on this account, less grain is lost by shedding, while being carted; and as a stack built of mown sheaves is more open than one of sheaves shorn with sickles, the grain and straw in it not only win sooner, but on that account, may be carried with safety from the field in an imperfectly dry state. It is allowed that a stack of mown sheaves has a rougher appearance than one of sheaves cut with the sickle, and that it exposes a greater number of heads of grain to the weather and the depredations of birds; but this difficulty is easily overcome, as a man can dress a stack with a scythe blade in an hour, as stated by Mr. Taylor. It is admitted that shorn sheaves are thrashed about ten per cent. faster, with the flail, than mown ones; but as that implement is now in very limited use in Scotland, and as a good thrashing machine is equally effective and expeditious with sheaves cut in either way, this objection is of little importance. Another question of moment in using the sickle and scythe is the quantity of work performed by each, and its cost. The following are the results of Mr Taylor's experience in the employment of seven harvest labourers connected with the operation of each implement, viz., with the scythe, two mowers, two gatherers, two binders, and one raker, and, with the sickle six reapers and one binder:—

	Of Wheat.			Of Oats or Barley.		
	A.	R.	P.	A.	R.	P.
By the scythe......	2	3	0	4	0	20
.. smooth sickle.	1	1	18	2	2	10
.. toothed sickle.	1	0	8	2	0	10

From these results, the advantage from the use of the scythe is obvious. According to a statement given by Mr. Taylor, it appears that the cost of mowing is 4s. 0½d. per acre, a sum considerably less than the expense incurred by either kind of sickle. Mr. Taylor goes on to detail all the particulars of mowing, and describes the easiest method of acquiring the use of scythes and sickles; and he also traces the effects of the different kinds of reaping on the succeeding crops, especially on the growth of young grasses; but even a slight notice of all these matters would lead us too much into detail, and we must therefore refer our readers to Mr. Taylor's interesting paper when it appears in the Society's Transactions.

Mr. Finnie of Swanston then read a report of experiments made by Mr Lumsdaine of Lathallan, in Fifeshire, with various fertilizers on different crops. The crops experimented on were oats, barley, wheat, tares, pasture, young grass, potatoes, and turnips. The articles experimented with farm yard dung, foreign guano, Johnston's artificial guano, nitrate of soda, sulphate of ammonia, bone dust, rape dust, sulphate of soda, chloride of sodium, and gypsum. It is impossible for us in this brief notice to give a detail of the results obtained by Mr. Lumsdaine, in his numerous experiments, which appear to have been conducted with great care, and are very minutely exhibited by him in a tabular form; but the summary of conclusions which Mr. Lumsdaine has given may prove interesting. "1. *Oats.* In respect of this article of produce, it is observable that the nitrate of soda gave 608 lbs. more grain, and 82 lbs. more straw per Scotch acre, and the sulphate of ammonia 672 lbs. more grain and 118 lbs. more straw after a hay crop, at less than half the expense of farm yard manure, renewed after turnips; thus proving the great superiority of both these fertilizers, but especially of the ammonia. It farther appears that the ground in a natural state after hay is much more beneficially acted upon by these mineral fertilizers than by the higher *order of animal manures* after a turnip crop. 2. *Barley.* Here the rape dust beat the farm yard manure by an excess of 424 lbs. of grain and 51 lbs. of straw, whilst the artificial guano and nitrate of soda maintained an equal efficacy, but from the expense attending these being only 2-5ths of the cost of rape dust, the preference is due to them. 3. *Wheat.* In this case the mineral fertilizers are at a discount in point of grain produce, though superior in yield of straw to that which got nothing. There appears, therefore, no encouragement for a repetition of these applications. 4. *Tares.* There is no reason to conclude that the greater proportion of produce of this article would repay the expense of the fertilizers employed. 5. *Pasture.* Here it is quite problematical whether the earlier progress of the pasture by ten days would, in upland and late districts, be sufficiently compensatory, supposing the outlay to be essentially necessary, in consequence of the expenditure of the winter keep. 6. *Young grass for hay.* The conclusion here follows that the sulphate of ammonia might be profitably employed as a top-dressing in preference to nitrate of soda, and from its earlier advance of the pasture by 12 days than the patch which got nothing, the aftermath would be sooner available and more productive. 7. *Potatoes.* The inference in this case is, that the patch with the farm-yard dung, and sulphate of soda, and chloride of sodium takes the lead. Next, that with the farm-yard manure by itself. Then those with Johnston's artificial guano and farm-yard dung, and farm-yard dung with rape cake; and last of all the two portions with the foreign and artificial guanos by themselves, which are nearly equal in merit with reference to cost and produce. 8. *Turnips.* Under this head the great superiority of the foreign guano is particularly prominent in the production of 530 stones more bulbs than from farm-yard dung alone, at little more than half the expense. Next comes the mixture of dung with foreign guano, yielding 357 stones more than dung alone, at an expense of a guinea less per acre. Then follows the combination of dung and bone-dust, giving 97 stones more than dung alone, at 14s. less money. The bone-dust by itself comes next, followed by the artificial guano by itself also, and in combination with farm-yard dung. The rape-dust, with nitrate of soda and chloride of sodium, may safely be repudiated both from the scantiness of the produce and the expense incurred. In the absence of further information, I would," observers Mr Lumsdaine, "in the mean while, ascribe the total failure of gypsum, with sulphate of ammonia, to the insufficient supply of gypsum."

Mr. Mackenzie of Dolphinton exhibited and described an implement which may be used as a scoop, or scraper, in cleaning out the bottom of tile drains. It was invented by Robert Kerr, a labourer employed on the estate of Dolphinton, and it has been found well adapted for the purpose, according to the testimony of Mr. J. Waugh, tenant at Dolphinton, who says that the labourer is enabled to execute more work, and with greater ease, with it than with the common tools.

Dr. Macdonald then read a paper by Mr. Robert Boyd, Innerleithen, Peeblesshire, on the prevention of the curl in the potato, and on the best method of keeping potatoes intended for seed. Mr. Boyd says that he has been more troubled with the curl in the potato than any other disease to which the plant is liable. For ten years a portion of his garden invariably produced curled potatoes, although the seed was annually changed, and not unfrequently the manure itself. On examining the tubers of the curled plants, he invariably found them affected with the wire-worm, or a small slug or snail, and although he dusted the sets with quick lime, not a single plant was produced free of curl. He next dipped the sets in a mixture of salt and water, and dusted them with quick lime, and though the crop fell far short of an average, it was nearly double of that produced by the sets not dipped in the saline solution. Next year, on the sets being dipped in a solution of lime, salt, and water, gave a satisfactory result, both in regard of freeness of disease and extent of produce. As to keeping potatoes for seed, Mr. Boyd tried the planting of potatoes which had unintentionally been left in the field all winter in comparison with those which had been pitted in the usual way, the seed, the soil, the manure being alike, and the result was that the plants from the sets which had been left in the soil all winter were hoed, before those from the pitted potatoes appeared above ground, and they also ripened fourteen days earlier, and produced nearly a fourth part more of crop. In consequence of this result, Mr. Boyd left some potatoes in the drill all winter, which he intended for seed, only protected from the frost by a little rough dung sprinkled upon the ground; and he also made a pit of about four feet in diameter of the same kind of potato which had been left in the drill, *the pit consisting* of a layer of potatoes and one of earth alternately, and covered in the usual way. In the spring of 1841, the potatoes in the pit seemed well preserved, though not so juicy as those left in the drills. On both being planted, the sets from the drills germinated some days earlier, were sooner ripe, and produced a heavier crop, though those from the earthy pits gave a superior crop to those pitted in the usual way. Latterly, Mr. Boyd tried keeping his seed potatoes in trenches six inches deep strewed with salt and covered with rough dung. The potatoes were taken out fresh and unsprouted in the spring, and the plants from them were equal to those raised from seed kept in the drill all winter. Mr. Boyd mentions an interesting result obtained by using saw-dust and coal ashes as manure to potatoes, and raising therefrom a crop of 20 bolls from three-eighths of an acre.

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BURTON-UPON-TRENT FARMERS' CLUB.

THE IRRIGATION OF LAND.

At a recent meeting of this club, Mr Harding, of Rosliston, called the attention of its members to the subject of irrigation of land. Having had a considerable degree of practical experience in irrigating land, and having in all cases, where it was properly applied, witnessed the most beneficial results from the practice, he was anxious to submit the subject to the consideration of the club, in the hope that an inquiry into the merits of the system might lead to its extension in this neighbourhood. He gave it as his opinion that though some water might be impregnated with fertilizing substances, and therefore be very superior to other streams for the purposes of irrigation, yet that all water, flowing from any source, whether ponds, springs, or brooks, was (except in cases where the source was in bogs or in mineral springs) sufficiently efficacious to make it profitable to employ them. And though, of course, good land would in all cases make a larger return of produce for irrigation, just as it would for any other kind of manure, yet that every kind of land would receive benefit from the artificial application of water in proportion to its degree of natural fertility. Observations of the effects produced on lands which were periodically overflowed by the swelling of running streams could not but lead to the opinion that water possessed a fertilizing power, and also to the attempt to imitate, by artificial means, the plan which nature exhibited. By attending to the injurious effects which were produced, where the water, instead of passing over the land in a current, was, as it is commonly called, back-pounded on the land and confined in a stagnant state; or where, from the retentive nature of the soil, or from a want of outlet for the water, the land could not rid itself of it, we learnt to avoid by art the defects which frequently occurred in natural irrigation. It was in vain, he thought, to expect land to be benefited by artificial watering unless these defects were guarded against. If the land was not so situated as to permit of a ready and efficient drainage, the success of irrigation would in no case be complete, and the practice would too often be an entire failure. A partial and imperfect drainage would secure partial success, but the speedy emptying of the land was as essential as the covering it with water.

With respect to the best mode of irrigation no directions could be given which would apply to the very various circumstances of land. Flat, level ground might be arranged in beds, and the water suffered to rest on them for a proper time; while on sloping ground gutters might be arranged across the slopes, and the water suffered to flow down over the land, from the higher channels into the lower, forming what is called catchwork. These two plans, modified to suit the form of the land, were applicable to all cases where irrigation was practicable. As to the management of the watering, he was of opinion that two days and two nights were long enough for the water to flow over the land, and this might be repeated at intervals of three weeks or more, according to the convenience of consuming the crop, &c. Care should be taken to clean out the channels every year, and to keep the surface of the ground level, so that the water might be distributed equally and at one time over every part of it.

Mr Harding instanced a number of cases of irrigation which he had himself effected or had assisted others in effecting, and which had been always productive of a profitable return, though the profit varied with the kind of land and the efficiency with which the plan of irrigation and drainage had been carried out. A meadow belonging to his father, which was a bed of peat, saturated with water, and which cut only 14 or 15 cwt. of inferior hay, was laid out for irrigation, at an expense of £6 per acre, and after the first year it grew 25 or 27 cwt. of hay. But the drainage had been very imperfect, and on the cutting of a new watercourse by the landlord, opportunity was offered of improving the work in this respect. It was well drained, and since that time had for 14 or 15 years yielded [illegible] tons of good hay, a valuable spring-eating for sheep, and aftermath for cows. He noticed that a part of the field which was watered from a pool, fed by a spring of pure clear water, produced a more abundan crop than the rest of the field, which wa supplied from another pool.

A piece of sandy, hot land, at Teddesley was irrigated by Mr. Bright while Mr Harding was with him as a pupil. The water was got from the drainage of higher land. The crops had usually been 22 or 23 cwt. of hay, to produce which required a top dressing of manure every alternate year. After irrigation the crop was 35 cwt. of hay, and no manure was needed. The grass was so early in the spring as to be very valuable as a succession to turnips, and the aftermath was abundant.

A meadow, belonging to J. Deakin, Esq., which was a peaty soil, and so wet as to be almost a complete bog, and which was let for 10s. an acre, was laid out in bed-work with shallow floating gutters and deep tail or drain channels, to allow the water to flow off, and keep the land tolerably sound. There was no fall to admit of its being effectually underdrained. The cost of the work was about £6. He had observed this land for twelve years, and could bear witness to the very great improvement the irrigation had effected. The crop of hay averaged 45 or 46 cwt., the spring eating was worth 20s., and the aftermath 20s. per acre.

The discussion of Mr. Harding's paper elicited remarks from several members of the club on the general principles of irrigation. Amongst other things it was observed that the failures of the practice, where they have shown themselves in the first years after the work has been laid out, have been usually owing to the want of drainage and the other faults of management pointed out by Mr. Harding. But it has been observed that in many cases in which, after some years of increase of produce, the land has fallen off in its yield, and the herbage has become greatly deteriorated. This, more than anything else, has tended to create a prejudice against the practice. The failure in these cases, it was suggested, is owing to one or other of two causes, or sometimes to

grasses may not have been of
ar well the application of water,
nsequently decline gradually in
.e other cause is, that, in con-
the frequent mowing, the soil
become deficient in the inor-
tuents of plants which are car-
he crops. There are but few
will bear a constant loss of these
though some soils, and especi-
ow grounds in the valleys of
es, are so rich in them as to bear
waste for many years. But as
pt in few cases) does not return
hose saline and earthly matters,
ts by furnishing the materials
growth to plants, land which is
comes deficient in them just as
pasture does. The same rule
efore be applied to irrigated
we follow in uplands, namely,
now when the crop begins to
therwise to repair the waste by
substances which we carry off
s.

◆

EADOWS IN HAMPSHIRE.—The
working up and watering the
f well attended to, from the last
tober until the middle of March,
ix to eight shillings per acre—
on the required work to be done
s some meadows are watered
r facility than others. Farmers
o water-meadows always take
s for their ewes and lambs, and
ten obliged to give as high as
hillings an acre, and never less
shillings. In feeding off the
eep are penned in the same way
and are never allowed to go back
ertain distance, as the irrigation
feeding by the sheep. After
-meadows are eaten off, rye,
-grass, or vetches, succeed, and
lso penned and eaten off by the
lambs intended for early sale.
r-meadows produce from 1½ to 2
y per acre, and the aftermath
rty shillings per acre.

F TESTING THE QUALITY OF GUANO.
uano is the excrement of sea fowl,
ing in countries where there is no rain. It owes its virtue as a manure, first, to the presence of ammoniacal salts, and, secondly, to that of the phosphate of lime, or bone earth, derived from the bones of fish. To test for the ammonia, take a spoonful of guano and a spoonful of powdered quick-lime, put them in a mortar and rub them with the pestle for a few seconds. If the guano be genuine, the smell will resemble that of a bottle of salts, and will make the eyes water in the same manner. In this way it may be proved whether the sample be guano or not; and also the strength of different samples may be estimated by the comparative strength or effluvia of the ammonia disengaged. To test for the phosphate of lime, place a small quantity (say 100 grains) in an iron ladle, or earthen pipkin, or any similar vessel, in which, heat it red hot over a clear fire for twenty minutes. If the guano be genuine it will be reduced to a white ash, weighing about 35 grains. If the 100 grains when burned weigh much more than 35, the guano is not genuine, or contains an undue proportion of sand or similar matter. The ashes from genuine guano will be found to be phosphate of lime, nearly pure. If it be required to prove this a small bottle of acetic acid or white vinegar will dissolve the phosphate, and hold it in solution, leaving the silica and alumina (probably amounting to three or four grains) undissolved. The ashes should be left in the acetic acid for two days, and the bottle occasionally shaken. It is assumed that the guano to be tested be dry.—*Correspondent of the Farmers' Journal.*

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PROFESSOR JOHNSTON ON GUANO AND STEEPING SEEDS.

THE learned Professor in the course of a lecture which he recently delivered in the Museum of the Highland Society, thus alludes to *Guano* and to the *Steeping of Seeds.* The fact that guano is now out of the market in this country until further cargoes arrive—that its extraordinary consumption has increased the value of freights, as it is said, full 10 per cent—and that notwithstanding all this, there are those who doubt its value as a fertilizer—render any remarks upon it doubly interesting:—

"The guano brought from Peru was much deteriorated by the length of time it had been subject to fermentation and decomposition. It was of great importance that it should be as recent as possible, and those guanoes which were so, were lighest and palest in colour. He had some Bolivian guano which was light in colour, and therefore better than that from off Peru. In Africa it was found in great quantities, especially in the island of Ichaboe, the bay of Angra Pequena, and upon Possession island. The Ichaboe guano was sheltered from the sea, and there was reason to suppose that it was a better quality than the others. He had investigated several samples of these guanoes, some of which he had got from Mr. Downie of Glasgow, and the following was the result:—

Composition of the different kinds of guano.

	Levenside.		Star of the West.		Ichaboe.	Bolivian.	Chinan.
Water........	13.75	22.85	13.50	27.66	17.41	8.34	15.90
Organic matter & amm. salts	58.09	52.66	32.31	32.34	55.83	65.60	51.37
Sulpht. of soda	—	—	33.50	9.80	—	—	—
and com. salt	6.94	5.51	1.58	2.02	4.92	0.78	5.00
Carbon. of lime & magnesia..	3 32	2.77	5.81	4 12	3.54	1.12	3.57
Phos. of lime & a little phos. of magnesia.	15.07	12.10	12.00	20.18	18.23	19.80	21.77
Earthy matter.	2.83	2.83	3.11	1 30	0.57	4.46	2 39
	100	100	100	100	100	100	100

"In regard to steeping seeds, he had no doubt that every kind of seed grown would be greatly benefitted, and he had drawn out a table which he thought contained all the elements which a steep for grain ought to contain:—

Steep for Corn and Beans.

Phosphate of Soda, Sulphate of Magnesia, Nitrate of Potash, Common Salt,	1℔. of each in 10 gallons of water to steep 300℔. of seed.
Salammoniac, or Sulphate of Ammonia,	To be dried with gypsum, or quick lime.

PHILOSOPHY OF WOOL.

To show the business-like determination of our transatlantic brethren to become wool growers we take the following from a late number of the *Cultivator*, a monthly paper published at Albany in the State of New York. Mr. Morrell gives his correspondence a pompous title, notwithstanding which it appears to contain much really useful information:—

ELASTICITY.

Messrs. Editors—A writer observes—"There are two antagonist principles continually at work in every part of the frame of every animal; and it is on the delicate adjustment and balance of power between them, that all healthy and useful action depends; the disposition to give way, or submit to some alteration or form when pressed upon, and an energy by means of which the original form is resumed, as soon as the external force is removed." These two principles are beautifully exemplified in the fibres of wool, obviously much dependant on the numerous and minute spiral curves, so manifest in the Saxon and Merino. Take for instance, a single fibre of wool of these varieties of sheep, if it be stretched to its full length, and then suddenly set free at one extremity, it will resume its ringlet form; and hence upon the union of *pliability* with the *elastic principle* chiefly depends the usefulness, and consequently value of wool.

The play of these powers is differently adjusted in different wools. In the Saxon, calculated for our finest fabrics, the action of these opposing principles is beautifully balanced. Hence it is the fabric is so easily shorn of its superfluous nap, the facility with which it yields to pressure, and covers the threads of the cloth with a dense, soft pile. Notwithstanding the injury the elastic powers may receive by the process of manufacture, yet by the aid of a microscope, the nap presents innumerable minute curves closely tinging the texture; and to this much of the beauty of our finest cloth is owing. To these opposing powers of the fibre, the felting principle is not a little indebted, as will be explained hereafter.

SPIRAL CURVE.

The spiral curve or ringlet form of wool, has been referred to. This is one of the distinguishing qualities between wool and hair the latter being comparatively straight. It is remarkable in all short wooled sheep, but in no other varieties is it so conspicuous as the Saxon and Merino. It is observable in the Leicester and other long wooled varieties, but in a far less degree; and with some species of the goat, under the hair of which is found a perfect wool, having the true felting property, and the fibre considerably curved.

I am now about to state a fact confirmed by my much lamented friend, Mr. H. D. Grove of Rensselaer Co., who was a native of Saxony, and which from its novelty, will surprise many.

There is an intimate connexion between the fineness of the wool, and the number of the curves, or otherwise, *in proportion to the number of curves in a given span, is the diameter of the fibre.* It should be stated, however, that this is more generally true of *pure* Saxon and Merino. It can be easily demonstrated, if the experiment is fairly made with the *micrometer,* care being taken not to destroy the curves by extension, but the fibre placed in the instrument as it *naturally grows upon the sheep.* From M. Lafoun's work on German management of sheep, the following is extracted, bearing on this point:—

"Those breeding *pure* Saxons, inspect their flocks three times in the year; before winter, when the selection of lambs is made, in the spring, and at shearing time. Each sheep is placed in its turn on a kind of table, and examined carfully as to the growth, the elasticity, the pliability, the brilliancy, and the fineness of the wool. The latter is ascertained by means of a micrometer. *It being found that there was an evident connection between the fineness of the firbre and the number of curves, this was,* more accurately noted, and the following table was constructed. The fleece was sorted in the manner usual in France. The fineness of the Superelecta, or picklock, is represented by a span corresponding with the number 7 on the instrument."

Sort.	Name.	Curver in an inch.		Diameter of fibre.	
1.	Superelecta,	27 to 29	7	or 1-840th	of an inch.
2.	Electa,	24 to 28	8	or 1-735th	"
3.	Prima,	20 to 23	9	or 1.660th	"
4.	Secunda Prima,	19 to 19	10	or 1-588th	"
5.	Secunda,	16 to 17	11	or 1-534th	"
6,	Tertia.	14 to 15	11½	or 1-510th	"

The above will show the necessity of more care with wool growers in breeding from such sheep only whose wool approximates nearest to the principle laid down, as it is to this curled form of wool its most valuable uses depend. It is one agent, though not the principal, in producing the phenomena of felting. "It materially contributes to that disposition of the fibres which enables them to attach and entwine themselves together; it multiplies the opportunities for this interlacing, and it increases the difficulty of unraveling the felt."

The numerous and minute curves being, as observed, eminently characteristic of the pure Saxon and Merino, will serve as a sure test, in all cases, of the purity of blood, and therefore affords a certain and unerring guide in the selection of breeding sheep. If it is rigidly adhered to, the every day attempts to dispose of grades for high bred sheep will be frustrated.

SOFTNESS.

It is not as generally known as it should be, that softness is a quality of wool of much consequence. When the wool buyer and stapler proceed to an examination of a parcel, their judgment will be materially affected as to its value, whether "soft in handle," or otherwise. This, however, generally speaking, is the result of comparative fineness; but by no means always so, for wool of the same quality of fineness has not the same degree of softness. There are several causes to account for it, and among them is soil; as for instance, the chalky districts of England, affect the wool to such an extent as to make it invariably brittle and harsh. This however, is only local. The general cause of a deficiency of softness in wools of the same breed, may be referred directly to the *condition* of the sheep. In a former number it was stated that when the animal was kept in uniform good condition, the necessary quantity of *yolk* was supplied. Now if there is but little of this substance, which will follow an abuse in management, the wool will be less pliable and "kind to feel." Therefore it may be set down as a universal rule, that wool owes much of its softness to the *presence* of a *sufficiency* of *yolk*.

As a testimony how much this quality of wool is appreciated by the manufacturer, it is affirmed on the authority of an English author, "that two parcels of sorted wool being taken, possessing the same degree of fineness, but the one having the soft quality in an eminent degree, and the other being harsh, the cloth prepared from the first, at the same expense, will be worth more to the manufacturer than the other, by full 20 per cent." The salving of sheep in Scotland and the northern extremity of England alluded to in my last, is very much for the object to promote softness of the wool; and the result from the manufacture of such wool, as stated by Mr. Bakewell, will also be remembered.

L. A. Morrell.

Lake Ridge, Tompkins Co., N. Y.

Horticulture, &c.

Gooseberry caterpillar.—To syringe the bushes with tobacco water, which should be diluted with an equal quantity of soap-suds, is an effectual remedy; or to syringe occasionally with lime-water; or even moisten the bushes, and then dust them with fine road-dust.

Greenhouse climber.—There is no climbing plant suitable to a south wall in a warm situation, or to a greenhouse, which can at all compare to the Wistaria Chineuse, (or, as it was called after the Chinese merchant Consequa, from whose garden it was obtained, W. Consequana.)

Smith's Queen Victoria Fuchsia.—It was raised from seed by Mr. Smith, nurseryman, of Dalston, Middlesex, and elicited considerable attention when it w exhibited at the gardens of the Roy Botanic Society, in Regents' Park, la July. Indeed, it may be deemed the be and most conspicuous hybrid that appear last season in any of the metropolitan co lections. In a general way, it is after th character of F. Chandlerii; but it is a ve much superior plant. The habit is strong and freer, and the foliage larger, while th flowers are far more attractive, and greater size. Their dimensions, in fac are nearly twice as great as those of F Chandlerii, and the colours are richer and more decided. The sepals are of a pale whitish blush, tinged with green at the tips, long pointed, and seldom at all reflexed, though expanding well. The corolla is particularly large, and of a deep purplish crimson hue. The plant bears its flowers in great abundance from the axils of its leaves. Mr. Smith having now, we believe, obtained a small stock of it, will most likely be able to supply it towards the end of this season. Its capabilities as an ornamental plant have been by no means yet developed; and it will doubtless form an admirable plant for purposes of show, when grown as a specimen. It will most probably be one of those sorts which look best when kept in a comparatively small state; and hence, it will be advisable to propagate it frequently from cuttings in order to have young specimens. After it begins to grow in the spring, it should never receive a check till it has nearly ceased to flower in the autumn. One of its good properties appears to be that its blossoms do not fall off, like those of other Fuchsias, but remain on till they are quite withered. It also bears forcing remarkably well, and has been in flower with Mr. Smith for several months.—*Paxton's Mag. of Botany.*

Rhododendrons.—The seeds of these should be sown thinly upon the surface, the soil being previously watered. After sowing, press the seeds down gently to imbed them in the surface, and sprinkle a very little white sand over them, not with the view of covering the seeds, but to make a firmer surface, which future watering will not so easily disturb, and which will, in a great measure, prevent dampness. As a further precaution against damp, keep a potful of sand over a hot flue or pipe, and as soon as the young plants make their appearance sprinkle a little warm sand in among them occasionally whenever they show any indications of dampness.

Grafting Coniferous Plants. — The proper time for grafting these is when the young shoots have made about three-fourths of their length, and are still so herbaceous as to break like a shoot of Asparagus. The shoot of the stock is then broken off about 2 inches under its terminating bud; the eaves are stripped off from 20 to 24 lines own from the extremity; leaving, howver, two pairs of leaves opposite, and close the section of fracture, which leaves are f great importance. The shoot is then lit with a very thin knife, between the vo pairs of leaves, and to the depth of 2 iches; the scion is then prepared; the wer part being stripped of its leaves to e length of 2 inches, is cut, and inserted the usual manner of cleft-grafting. They ay be grafted, also, in the lateral manner. he graft is tied with a slip of woollen, and cap of paper is put over the whole, to rotect it from the sun and rain. At the nd of 15 days this cap is removed, and the igature at the end of a month; at that time also, the two pairs of leaves, which have served as nurses, are removed. The scions of those sorts of Pines which make two growths in a season, or, as the technical phrase is, have a second sap, produce a shoot of 5 or 6 inches the first year; but those of only one sap, as the Corsican Pine, Weymouth Pine, &c., merely ripen the wood grown before grafting, and form a a strong terminating bud, which in the following year produces a shoot of 15 inches or 2 feet in length.—*Loudon's Arboretum Britannicum*, vol. iv., p. 2130.

Gum in wall trees.—Cherry trees are sometimes subject to the loss of sap, which, when exposed to the air becomes thickened, and is called gum. It proceeds from external wounds, or from wind shakes in the branches or stem. The remedy is cutting away the diseased parts, and covering the wound with grafting clay, in which a good portion of soot has been incorporated.—*Fruit Cultivator.*

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To Tame a Savage Bull. — Erasmus Galson, of Loxton Manor House, near Cross, Somersetshire, has invented a most valuable, though, at the same time, simple instrument to prevent savage bulls from injuring persons or animals. Mr. G. has communicated his clever invention to the Royal Agricultural Society with the following remark :—"I turned a three-year old savage bull with a cow into a paddock, and also turned a yearling bull with them; in a few minutes the young bull found that he was master and punished the old one severely; and I was shortly after able to take off the irons, and as long as I had him he never offered to hurt a person, although when I bought him he had tossed several people, and was sold to me as incurable." The instrument is made of a small iron rod and chain, the chain end being fastened to a ring in the bull's nose, and the rod hanging on a pivot fixed in an iron cap on the bull's horn. The end of the rod projects some inches from the horn, and whenever the animal attempts to toss, the end of the horn coming in contact with any object is forced upwards or downwards, and the bull's nose drawn up, by which the animal is severely punished, and incapacitated, through pain, from committing mischief. Any blacksmith can make the instrument, and its cost is not much above five shillings.

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METEOROLOGICAL & RURAL OBSERVATIONS.—WINWICK, May, 1844.

We have again had dry weather during the last month with but slight interruptions, the Barometer ranging unusually high, and the winds generally blowing from a northernly direction, with variations to the N. W. and E.

We have had some rather threatening aspects various times, the air being somewhat colder and a general gloom pervading the atmosphere. The Barometer has, however, continued high, and

the rain that has fallen has never been sufficiently copious to prove beneficial to the country. the night between the 17th and 18th inst. we had a rather severe frost, which cut down the po toe crops in all parts of South Lancashire, and did considerable damage to the full blown fr trees. It was followed by another scarcely less severe on the following night, accompanied cold piercing air from the N. E., which continued for a few days, causing the corn crops to b little blighted and considerably checked in their growth.

We have again another reaction of hot scorching weather, the pastures being almost complete burnt up; and where there is a full stock upon them the cattle are almost at a stand-still, to t infinite loss of their owners.

The appearance of the atmosphere at present has not the least indication of coming rain, an the barometer is gradually rising; but if there is not a change soon we may bid farewell to a hopes with regard to the expectations of any weight of grass crops.

CALENDAR, 1844.

April 28. Oak (quecus robur) in leaf
„ Broom (spartium scoparium) in bloom
„ Daphne (daphne mezereum) in do.
„ Horse Chesnut (æsculus hippocastanum) in bloom
May 5. Ash (fraxinus ecelsion) in leaf
„ Locust (hymenaen) in leaf
„ Lilac (syringa vulgaris) in bloom
„ Wasp (vespa vulgaris) building nests
„ Blue Bell (scilla nutans) in bloom
„ Marl Clover (trifolium medium) in do.
„ Red flowered Lychnis (lychnis diurna) in bloom
May 5. White flowered Lychnis (lychnis ves pertnia) in bloom
„ Blue Speedwell (veronica officinalis) i bloom
„ Broad-leaved Orchis (orchis latifolia in bloom
10. Laburnam (cytisus laburnam) in bloon
„ Mountain Ash (sorbus seu pyrus aucu paria) in bloom
„ Gelder Rose (vibunam opulus) in do.
15. Peony (paeonia officinalis) in bloom
„ Hawthorn (cratægus seu mespilus oxy cantha) in bloom
20. Elm (ulmus campestris) in bloom

ATMOSPHERICAL OBSERVATIONS, FROM APRIL 21st to MAY 20th, 1844.

WEATHER.	A. M	P. M.	Even.	Days	PREVAILING WINDS. N.	N.E	E.	S.E.	S.	S.W	W.	N W	Total.	
Clear	5	7	11	5	1	5	8	2	3	0	2	2	23	
Fine	21	19	16	20	7	15	10	4	2	0	4	14	56	
Fair, cloudy............	0	1	1	0	0	0	0	0	0	0	0	2	2	
Rain	4	3	2	5	0	2	0	0	0	0	1	6	9	Sun shown o A.M. 29; P. 29; days 2
Total	30	30	30	30	8	22	18	6	5	0	7	24	90	
	A.M.	P.M.		Days										
Frost	10	0		10	0	2	3	0	1	0	1	3	10	
....	0	0		0	0	0	0	0	0	0	0	0	0	
....	0	0		0	0	0	0	0	0	0	0	0	0	
....	0	0		.0	0	0	0	0	0	0	0	0	0	

FORCE OF WINDS.

FORCE.	N.	N.E	E.	S.E.	S.	S.W	W.	N.W	Total.
	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.
1 Calm, or gentle breeze	2	3	4	0	0	0	1	7	17
2 Moderate wind	6	16	14	6	5	0	5	17	69
3 Fresh breeze	0	3	0	0	0	0	1	0	4
....	0	0	0	0	0	0	0	0	0
Mean Force	1 75	2·0	1·77	2·0	2·0	—	2·0	1 75	1·85

FALL OF RAIN.

	Days.	Depth. in. dec.
From Apr. 21st to 30th	.. 2	0·0
„ May 1st to 10th	.. 2	0·06
„ „ 11th to 20th	.. 1	0·0
Total	5	0·1

ATMOSPHERIC PRESSURE.

	Max.	Min.	Mean.	Max.	Min.
	in.	in.	in.	May,	May,6,
Height	30·56	29·90	30·2599	2nd.	7.Ap.30
Diurnal varia	0·32	0·00	0·0956	16th.	M9,10,15

Utmost range or greatest variation .. in. 0·66

TEMPERATURE.

	Max.	Min.	Mean.	Max.	Min.
	o	o	o		
Max. or Solar Tem	78	54	67·500	May 6	May
Min. or Lunar do.	47	27	36·100	Apr 21	Apr.
Mean: Diurnal do.	60	42 25	51·833	May 11	May
Diurnal variation.	46	13	31 413	„ 6 & 8Ap	21,

Utmost range or greatest variation... 41

Winwick, May 25th, 1844. EDWARD ROTHWELL.

The Earl Fitzwilliam has intimated to his tenantry that he will pay half the expenses for providing tanks for containing liquid manure, on the several farms held under his lordship. It is hoped that there will not be a single tenant who will not avail himself of this liberal offer; and it would be well if some other landlords would follow the noble lord's example.—*Doncaster Gazette.*

Cheshire Cheese.—Poor men eat cheese for hunger, rich for digestion. It seems that the ancient British had no skill in the making thereof, till taught by the Romans, and now the Romans may even learn of us more exactness therein. The county of Chester doth afford the best for quantity and quality; and yet their cows are not (as in other shires) housed in the winter; so that it may seem strange, that the hardiest kine should yield the tenderest cheese. Some essayed in vain to make the like in other places, though hence they fetch both their kine and dairy maids. It seems they should have fetched their ground too (wherein is surely some occult excellency in this kind), or else so good cheese will not be made. I hear not the like commendation of the butter in this county; and perchance these two commodities are like stars of a different horizon, so that the elevation of the one to eminency is the depression of the other.—*Fuller's Worthies.*

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PRACTICE AGAINST THEORY.

Theorists say that two corn crops should never be taken in succession from the same land. This theory is also put in practice in some districts by good farmers, and, as a general rule, the practice is good. I have myself, in my earlier days, been a firm advocate for its universal adoption. Experience tells me this theory is not correct in every situation. The best practice is that which produces the greatest value of produce from the same land, at the least expense, without deteriorating the soil. To do this, a farmer must study his soil, the climate, and the markets. Science tells us we may grow corn crops in succession, and even one particular description of corn; for instance, barley may succeed wheat, and oats follow the barley crop, because each are fed from different substances or food in the soil. Of course, each take from the soil a different material. According to science, wheat, or any grain, may be grown on the same land every year for ages. To do this, it is said, a farmer has only to apply that kind of manure to the soil, every year, which is required by the kind of grain sown. From my experience science, or we may say theory, does not agree with practice, so far as to recommend sowing one particular kind of grain every year upon the same land; but from my own experience, and from what I see every year, in South Lancashire, good husbandry does not forbid either oats or barley following a crop of wheat. The very best farmers, and those who have made the most money, adopt this practice.

In South Lancashire, and North Cheshire, a potatoe crop is almost universally taken in place of a plain fallow, because the demand for this root is so great. Potatoes always succeed best after clover or grass of some description whether old or young. Oats always succeed best after wheat, because the soil is always more broken and pulverized than when sown on a ley furrow, whether it be a clover ley or old grass land. The month of May is dry four times out of five, and in a dry May oats always receive great injury when sown upon any description of ley. The furrows lie hollow, that is, there is a certain space hollow under each furrow, and the furrow itself lies compact, except what is broken at the top with the harrows in harrowing in the seed. This is particularly the case in old ley when ploughed up for oats. From this cause, in a dry May, this crop is always very much injured while those sown after wheat will be a good crop. In a dry May, oats on a ley furrow are often also very much injured by the grub. If it be a damp May the slug, or white snail, is often equally injurious to the crop. Sown after wheat I very seldom saw either the grub or slug do the crop any damage.

Then again, clover, or grass seeds, always succeed best after a spring tillage; consequently succeed better after barley or oats than after wheat.

In a four-course shift when potatoes was the fallow crop, a Scotch farmer would recommend the following rotation:—1st, Potatoes after oats. 2nd, Wheat. 3rd, Clover. 4th, Oats. Here the green and the corn crops are alternate. I recommend the following:—1st, Potatoes after clover or grass. 2nd, Wheat. 3rd, Oats, or barley. 4th, Clover or grass. Here there are two green crops and two corn crops together alternately. Those who adopt this course with spirit, and do their duty to the land with manure, and by keeping it clean, have scarce ever a failing crop; while those who adopt the former course have disappointment every year, however well they may perform their duty to the land. This year all the oats sown after wheat are at present looking far superior to those sown after clover or old grass, although I have seen little of either grub or slug this season.

In preparing clover ley, or old grass land, for the potato crop, I very much recommend trenching, either with the plough or the spade; the latter if hands are plentiful.—*W. Rothwell, Winwick, May 27th,* 1844.

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WASTE LAND IN SURREY.

In answer to your correspondent, who signs himself a *Lothian Farmer*, I beg to inform him, through the medium of your widely circulating Journal, that the waste land in Surrey is nearly continuous over a circle of seventeen miles diameter; very many parts of which are capable of producing remunerating crops, which can be proved by adjoining small plots successfully cultivated by the cottagers; what is done on a small scale may also be done on a large scale by the union of capital, labour, and skill.

There is now on hand many hundred thousand acres of this sandy waste which may be rented at from £3 to £7 per acre, with liberty to purchase any part within 20 years. There is also some already broken up from a state of nature, having been trenched and surface burnt, which may be had at from £7 to £10 per acre rental. Within an easy walk of the Famboro' railway station, there is a plot of 110 a
very level parallelogram, part brok
part in a state of nature, the whole
part may be purchased or rented;
shall be happy in communicating
with your correspondent. There is
difficulty in getting the fertilizers t
waste lands, as a railway and a can
through the midst of it, and there a
centrated manures at all the static
wharfs in the district.—*E. J. Lan*
rossa Cottage, Bagshot, May 25, 1844

Reviews, &c.

Quarterly Journal of Agriculture a
Transactions of the Highland and
cultural Society of Scotland. N
Blackwood and Sons, Edinburg
London.

"*On the importance of Agricultur*
quiring a knowledge of the Natural
and a habit of original observation,"
H. Fennell, author of a "Natural
of Quadrupeds." We are glad to
subject so ably taken up. What wid
for observation does the farmer p
what multitudes of objects of great i
are perpetually passing in review
him, and how perfectly are his i
and pursuits identified with those
yet how completely does he in a
way throw aside the advantages to
rived from an investigation of them
hope Mr. Fennell will be able, in t
pect, to change the character of the
farmer, in this hope we give his
pretty much at length:—

> "Numerous facts on record unite to
> me that agriculturists would find it ver
> tageous to habituate themselves to
> minute examinations of little objects a
> dents in nature which occur at every s
> are too often disregarded. It is desir
> agriculturists should not only read b
> natural history, but that they should
> observe with their own eyes everythi
> fields, orchards, and gardens, that they m
> some useful hints from nature's own vo
>
> "In the cultivation of plants it h
> found best to proceed on such scienti

ciples as a correct knowledge of their structure and functions will suggest. The system of assolements, or the rotation of crops, by which the produce of our land has been quadrupled, and the acclimation of plants by hybridization or engrafting, by which means the fruits and flowers of more southern regions are reconciled to our climate, are only two out of many examples which might be adduced of the benefits conferred by botany upon agriculture.

"While science dictates such valuable improvements as these, the mere observation of trifling facts often suggests useful ideas. It is said that the occasional natural union of the boughs of distinct trees demonstrated the practicability of grafting, and that the observation of the circumstance of a vine shooting more vigorously after a goat had browzed on it, suggested the valuable art of pruning fruit-trees. In the sixty-third volume of the *Philosophical Transactions*, we find it related that M. Mustel having observed that some of the flower-buds of an apple-tree had been gnawed off by a snail, in such a manner that all the petals and stamens had disappeared, being eaten up close to the calyx, which, together with the basis of the pistillum and the embryo, were left uninjured, concluded that those imperfect flower-buds would bear nothing, but was soon convinced of his mistake. Nearly all of them bore fruit: the apples were perfectly formed, and six or seven pretty large ones were seen upon each bunch. On the other hand, the snail had spared some other bunches which it could not so easily get at; but, out of ten or twelve flowers in each of these bunches, not above one or two exhibited any signs of fruit. This suggested to M. Mustel the idea that, when the flowers of trees are full blown, the prevention of the natural fall of the petals and stamens gives a greater assurance of the fructification, a fact which he several times proved: for, having cut off with the scissors the petals of apple, pear, plum, and cherry blossoms, close to the calyx, he found that almost every one of them bore fruit, whilst several of the uncut flowers bore none. Thus did a snail teach him how to render a tree more fruitful. A Sussex farmer having remarked that some gooseberry bushes, growing under an elder tree, were exempt from the attacks of caterpillars, was induced to try the efficacy of a decoction of elder leaves in destroying the grubs that infested his turnip crops, and he and other farmers who repeated the experiment found it successful.

"Here I may observe that it is not only necessary that the agriculturist should be well acquainted with the nature of the different vegetables which he cultivates for economic purposes, but that he *should rightly understand the causes* of the several ravages and diseases to which they are subject, so that he may be able to devise proper remedies and preventions. In this wide field for observation and practice, natural history will be found a useful guide. In nine cases out of ten the failure of crops, and the pecuniary loss experienced thereby, arise from the attacks of some particular species of destructive insect which, from unknown causes, has appeared in unusually great numbers. Before any effectual steps can be taken against it, it is absolutely necessary to ascertain correctly what species of insect is causing the mischief, and to study the creature's habits in all its transformations; for what will prove more or less effectual in one stage of its existence, will be totally useless, or, perhaps, increase the evil in another. Notwithstanding the immense annual losses which must be caused by the millions of destructive insects that infest all kinds of crops, the science of entomology is comparatively neglected by agriculturists, who are, therefore, frequently unable to give a definite description of any noxious insect to a naturalist when they require his opinion and advice.

"Those husbandmen who have possessed some knowledge of natural history have not merely been better able to cultivate their plants and protect them from the attacks of hurtful creatures, but they have ascertained thereby what creatures are harmless and useful, and therefore to be spared and encouraged. Without this power of discrimination they may be unwittingly led into the error of destroying creatures which were absolutely beneficial to them. Lady-birds, which are now well known to be most useful little creatures, feeding only upon the hurtful plant-lice, were at one time as mercilessly destroyed as the plant-lice themselves. We are told by Mr. J. D. Salmon that, in the neighbourhood of Scoulton, in Norfolk, there is a very extensive colony of black headed gulls, (*Larus ridibundus*,) which are carefully protected and encouraged by the farmers, who have noticed that they render most useful service by following the plough to feast on the cockchafer grubs and other insects that it turns up to the surface. So greatly do the farmers value the assistance of these birds, that they have implored the proprietor of the mere at Stanford Warren to discontinue gathering their eggs. In the first season after their eggs were spared, it was calculated that not less than 15,000 young birds were hatched, and the immense supply of food which this numerous progeny required, greatly increased the exertions of the old birds in obtaining for them many thousands of worms and insects.

"Those farmers who, from ignorance, permit poisonous wild plants to spread unchecked, frequently sustain serious losses among their cattle; for though these animals refuse such plants when grown to maturity, yet, in the early spring, when there is a deficiency of herbage, and the noxious sorts betray no sensible odour, they will eat, in their extreme eagerness for green food, almost anything that presents itself. Linnæus mentions the death of many cattle from feeding, in early spring, upon the water-hemlock, *(Cicuta virosa;)* and, more recently, Mr. Edwin Lees has recorded the death of several fine cows from eating the roots of a poisonous umbelliferous plant which had been carelessly suffered to grow about the sides of a ditch.

"Natural history, in its most extensive sense, being inseparably connected with all the arts of life, ought to form a part of the education of those who wish to promote them and to benefit by them. In every school in the kingdom, whether intended for males or females, for the rich or for the poor, natural history should find a foremast place as an elegant and useful accomplishment. There is hardly a common animal or plant concerning which some egregious error may not be detected in the minds of the generality of what are termed well educated people, who pride themselves on possessing a *finished* education—finished, indeed, before it had fairly commenced; for they who have learnt anything know that neither man's nor woman's education can ever be complete, as every day of our lives may be made to yield an improvement upon the lessons of our youth.

"In Sweden, natural history is the study of the schools by which men rise to preferment; and we are assured by the celebrated bontanist, Sir J. E. Smith, that there are no men with more acute or better-regulated minds than the Swedes. In the forests of Germany, especially in the small states of the interior, the Hartz, Thuringia, &c., there are schools in which are taught surveying and planting, together with the zoology, botany, and mineralogy of the forest. At one of the most celebrated schools in the world, namely, that of M. De Fellenberg, at Hofwyl in Switzerland, it is the chief aim of of the instructer to inculcaate in his numerous pupils the importance of closely examining such surrounding objects of nature as will most concern them when pursuing the particular professions and trades for which they are intended. The school contains about 450 scholars, among whom are many peasant boys; and no opportunity is lost of directing the attention of all, but especially of the latter, to nature's works, which are eagerly sought after, attentively studied, and most carefully perused for *future reference and* instruction. The collecting *of these objects affords* an employment which
is not only amusing and useful, but l
The museum thus formed is constantly i
ing, both in variety and utility. The p
contains are not classified scientifical
according to their properties, uses, and
ties. Seeds and specimens of useful
wood enrich this botanical collection.
rupeds, birds, reptiles, and insects a
studied and preserved by the pupils.
winter evenings are instructively spent
room by the poor children with their r
and on Sundays, after church, they go
the hills and woods, seeking fresh treasu
their museum. At Carra, in the neighbo
of Geneva, there is also an agricultural
where the children are taught the ec
botany of their native country, besides a
of other useful subjects. They amuse
selves with botanical excursions, and t
students carefully bring home and prese
the plants which they collect.

"The aptitude of peasants to receive sc
truths, when their curiosity is properly av
might be illustrated by mentioning a g
list of eminent philosophers who have
from the ranks of shepherds, ploughm
We shall, however, mention but two ex
At Bagis-Beost, near the hot springs
Pyrenees, lives Gaston Sacaze, whose na
been well known for the last 12 years
osophical travellers in those parts.
even quitting his native mountain, or ne
the care of his flock and the cultivatio
fields, he has found sufficient time to a
good systematic knowledge of the min
botany, and entomology of his native
entirely unassisted by any teacher ex
own eyes and a few books. That he
read the works of Linnæus he has taug
self Latin. Besides systematically cla
all the mountain plants, he has dra
coloured them, so as to form a rich herl
his humble home he has also formed a co
of minerals, stones, insects, &c., an
tending his flock he amuses himself with
of his own constructing, and songs of
composing. So much notice have his
attracted, that his portrait has lately bee
by the celebrated painter, Devéria. Th
ant naturalist calls to mind the inst
John Bertram, the famous Pennsylvai
tanist, who was orriginally an agri
labourer, but having his intellectual c
excited by an attentive contemplation of
and then dreaming about its beauty an
ture, immediately set about learning
Latin that was requisit to read botanical

"Great Britain abounds in grammar
for the poor, but where can it shew a
like the forest schools of Switzerland,

ıany? Where are the instructors to
peasantry those sciences which they
practically benefited by understand-
e want to see a full consummation of
ɔlent wish of Dr. Drummond, that a
om, a museum, and a useful library,
attached to every village, as regularly
ch or chapel; and that a portion of
ld be appropriated to teaching natural
ıd even natural theology, to the peas-
eology and agricultural chemistry
o be made to throw their light upon
er's mind, and his children should be
ıething about these subjects, as well
ır and cyphering. Agriculture would
lly attain to perfection, if all, without
who are concerned in it, were made
understand the processes on which its
ess depends. The labourer could not
me more skilful and more interested
loyment if he were taught to practise
nce and not merely as a toil.

ılture of plants will become a com-
easy process when we are better
with their peculiar functions, and
ıemical elements which they require
owth and maturation. We must not
with knowing what are their respective
alities, climates, and seasons, but
ı what chemical gases each species
m the atmosphere, through its leaves,
ubstances from the soil, through its
a plant be distinguished by its con-
otable proportion of soda, silica, &c.,
which it is to be grown must," as a
ıe *Edinburgh Journal* justly observes,
hese elements, otherwise the attempt
rtive;" for a plant can no more create
ca within itself than it can form water
ɔort, independent of the soil or atmo-
rom a knowledge of the principles,
ı rational theory of agriculture may
; and what has hitherto been little bet-
ı expensive and often distressing sys-
l and error, becomes a science guided
ws. Agriculture will always have to
ith the fluctuations of season and
ıt it is for human ingenuity to modify
nce, and this can only be effected by
d scientific procedure. As yet, the
agriculture is only in its infancy, but
ı not far distant when it will rank with
urer branches of knowledge—when
will be systematically treated for the
crop to be raised upon it—when ma-
be manufactured as we now manu-
la and sulphuric acid—when plants
d and stimulated as we now treat
in short, when the farmer will sow and
s much *security as the distiller* produces his spirit. The value of the science of chemistry to the agriculturist may be judged from the fact that, when the great French chemist, Lavoisier, took a quntity of land into his own cultivation, he very soon succeeded in doubling its produce.

"In learning the nature of the underlying soils, and the character of the surface soil, which in many instances depends upon the decomposition of the subterraneous strata, geology affords most valuable assistance. From the mere description of the character of any line of country, the geological agriculturist might form a tolerably accurate notion as to what must be the productions, pursuits, wants, and even the general constitutions of the inhabitants; and, if he possessed a knowledge of geological botany and geological entomology, he would also be able to predict what genera of plants and insects where there most plentiful. Geology could point out to him stores of lime and mineral manure in places where they were not generally known to exist. Without an ample supply of water no farming can be prosperously conducted, and here again geology comes to our aid, and suggests the formation of those Artesian wells which have given the precious blessing of water to many previously dry districts, as in France and various parts of England. Observation on the surface of the earth detects the deep reservoirs below. "Search and ye shall find;" for wherever deposits of a light and porous nature occur in hollows and depressions of firmer and older rocks, water will penetrate until it has accumulated into immense subterranean pools, the pressure of the superior strata preventing the fluid from exhibiting itself to the eye, except in slight oozings at the indented parts of the surface. When proper borings are made through the strata, the water is released from its confinement, and rushes up copiously from the valley or hollow. Beneath those spots of ground over which swarms of gnats are continually seen dancing in the air, the existence of wells may be suspected; for these insects disport themselves always where there is the greatest evaporation. It was by a secret knowledge of this fact that the professors of the divining rod detected hidden wells. Slight superficial observation may also detect concealed mineral springs, which may add to the value of an estate. Thus, the discovery of the chalybeate spa at Dorton, in Buckinghamshire, originated from some villager's attention being attracted to the circumstance that a little stream, which issued from a small orifice, destroyed the plants that came within its course; the few blades of grass that were spared bore a thick incrustation of oxide of iron; and the surface of the ground, which, for a few yards on either side of its channel, assumed a yellow and scorched appearance, was covered with a similar metalic deposit. The peasants called it the *Alum* Well, the taste of that substance being most apparent to them. It was also observed here, as at the Bath waters, that diseased cattle voluntarily and repeatedly repaired to the little stream, and rapidly recovered from their maladies. It was noticed that it afforded great relief to horses suffering from that very obstinate and almost incurable disorder, the mange. Owing to the powerful chalybeate qualities of this water, the manure of the cattle that drink of it will burn to a cinder, and is collected for fuel, in the same way that the Peruvian miners and mountaineers make bright fires of the dung of the llamas and alpacas.

"These several facts will, I trust, suffice to shew to every reader the policy of the agriculturist greatly enlarging his present sphere of knowledge, and the frequent advantages that would result from his practising a habit of original observation, with a view of deriving important suggestions from apparently trifling facts."

The Veterinarian for May. London, Longman and Co.

The members of the profession of Veterinary Surgery have held their first meeting under the charter, and our present number of the work before us is pretty much filled with an account of the proceedings, not omitting the glorification at Freemasons' Tavern, where "everybody drank everybody's health." There are, however, two or three useful papers, and the following copied from the *Boston Herald*:—

Murrain among Sheep.—Lately forty-nine sheep have been lost by Mr. Fountain, of Leake, under the following circumstances:—The flock was a short time since, and had been for some weeks, kept on swede turnips, and on being removed was driven for a few miles and placed on a piece of meadow-land. Next morning many of the sheep were afflicted with symptoms of lethargy, and appeared otherwise quite out of condition; and within forty-eight hours of their being placed on the meadow-land it was found necessary to slaughter from fifteen to twenty. Since then they have continued dying, and two days afterwards the number lost amounted to forty-nine. The animals, it seems, were afflicted with inflammation of the kidneys, supposed to have been produced by the distance they were driven and the sudden change of keep. The greater part of the carcasses were sent t the London epicures, and others to a butcher but none were purchased by any butcher of the town.

There is, in our opinion, in the case of all domestic animals, more mischief done by injudicious feeding than by almost any other means. Changes of their food ought to have very much of the farmer's care: the selection too of the pastures at this season is a matter of much moment; rank grass on undrained meadow is to our thinking as likely to endanger sheep to the ful as much in the spring as in the autumn, particularly if their winter keep has been scanty, and of indifferent quality.

Letters on the Rules and Regulations of Agricultural Society, &c.

We noticed these letters in our last. The writer observes, "that any premium which would induce a tenant to apply his skill and capital to the high cultivation of one field to the neglect of the farm in general, would be prejudicial alike to the individual and the public." This mode of reasoning goes the length of condemning *any* premium for a crop, because it has, according to the amount offered, a direct tendency to such inducement.

Of the premiums for the best cultivated farms S.M.B. (under which signature some of the letters were first published, as others were under that of R.L.H.) remarks:—

"With respect to premiums for the best cultivated farms, if they have not *hitherto* been attended with the full benefit that was anticipated, I, nevertheless, think the example of good management cannot have been entirely thrown away; and although the successful competitors have been amongst that class, "where nothing is wanted, as respects rents, buildings, confidence, or capital," I cannot but think it desirable that the farms of such occupiers should be brought forward as an example that might be followed to advantage, and to shew what the land is capable of by good management,—especially if the course of cropping and general management be made known, together with a correct statement of the disbursements and the receipts of the farm; and I think that in awarding the premium, it would be desirable

d be imperative that such state-
l be made for a period of at least
mmediately preceding the year of
"

ubject of leases the writer ob-

the general body of agriculturists
position to enter the lists as com-
premiums, it is necessary that there
mutual confidence between landlord
which is only to be attained through
granted for such a number of years
e the tenant to reap the advantage
y in improvements,—and granted
ns, in regard to rent, as will be fair
lord and tenant—not so high as to
necessity of over cropping to realize
to cramp the energies and dishearten
'nor so low as to promote indolence
n.'"

eneral premiums of Agricultural
e have the following:—

t ground work for premiums, as it
ne, would be to separate those who
ns as proprietors from those who
nants, classing them according to
f their farms, and the quality of the
aking such arrangements as would
to be contended for by each class
Unless this or some other scheme
to promote the same object, how is
mpetition to be induced? And how
ive merits to be decided between a
ccupies a farm for tillage in Suffolk,
hire, or Norfolk, and one who holds
rm in Leicestershire, or a farm in
another system prevails.

ns for stock should be regulated on
nciple; and the attention of Societies
rected to dividing the country into
ording to the qualities of the soil,
erior object of ascertaining the best
usbandry, and the description of
uited to each particular district, and
purposes for which each kind of
re kept.

espect to labourers, I can perceive
n to premiums being offered for
and steady habits. Instead, how-
ing a prize to the man who brings
atest number of children without
d, I would give one to those who
their families with the least propor-
according to the number of their
ithout taking into consideration the
ay have been given during sickness.
make the amount of the premiums
as would be *worth competing for*, as the deserving labourer I consider to be more entitled to a prize of £20 or £30 than the wealthy farmer who exhibits a bull, a horse, or a pig. But the greatest of all inducements to steady and moral conduct in the labouring classes, depends on the master, in putting them into such circumstances, in respect to their cottages, gardens, and the amount of rent which they are to pay for them, as will make them comfortable; for if a greater amount is fixed than can be paid out of their weekly earnings, after supporting their families, how can they provide for it, without having recourse to poaching, or other dishonest means? If they find their homes surrounded with comforts, they will be careful not to subject themselves to be removed by bad or dishonest conduct. Good management of gardens, &c. might be encouraged by the offer of prizes; as well as skill in those branches of labour where they are capable of being brought forward for public competition —such as prizes for ploughing, sheep shearing, &c.

We differ with the writer upon the subject of the advantages likely to be derived from Agricultural Societies as at present constituted. We know instances where great improvements have been effected in extensive districts through the operations of Societies subject to all the defects pointed out by our author; whether greater good might not have resulted from a different mode of management, is altogether another question, we freely admit that we think it might; but we are not of those who would quarrel with a positive benefit because it is not of greater amount. Our principle is to take "the good the gods provide us;" though at the same time where it can be extended—where the good can be made *better* or *best*—we hold it right to make it so wherever and whenever it can be safely done.

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Two Lectures on the Theory of Agriculture and on Farming, as practised in Cheshire; with advice for its improvement, based on the analysis of the soil. By Albert James Bernays. London, Ridgway.

WHILST we deem the farmers to whom these lectures were delivered but little the better for the first, we have great faith that the second was listened to with attention, and that the lecturer carried his hearers fully with him, particularly through that part of it which treats of manures. There is no question more interesting to the British farmer, and none certainly more important than the consideration of the means by which, in the most economical, and at the same time, effectual manner, he shall restore to his fields the fertility of which each successive crop robs them, for on it depends his recurring profit.

In order to show our readers how the lecturer handled his subject we take from the first lecture the following on *nitrogen*:—

"No plant can be supposed to attain to maturity, without the presence of matter containing nitrogen, since we find that nitrogen is contained in most parts of the vegetable fabric. How, then, does nature furnish nitrogen to vegetable albumen and gluten, to fruits and seeds?

"We have said that plants thrive well in pounded charcoal, when exposed to the influence of rain and air. Now, rain and air can only contain nitrogen in two forms,—either as dissolved air, a compound of four parts of nitrogen and one part of oxygen, or as ammonia, a compound of nitrogen and hydrogen. We have not one reason for believing that the nitrogen of the air supplies this element to the plant; on the contrary, we know that many plants give out this nitrogen, absorbed (sucked up) by the roots in a gaseous form. Numerous facts tend to prove, that the quantity of matter containing nitrogen, as gluten, depends upon the quantity of ammonia absorbed by the roots. Professor Liebig has found ammonia in the juices of most plants. Ammonia, too, is as easily transformed as water. It is very soluble in water, and forms soluble compounds with acids. All animal bodies, in the decaying state, give out ammonia. A generation of 1,000,000,000 of men is renewed every forty years; a far greater number of animals cease to live, and are reproduced in a far less time. What becomes of their nitrogen? It is conveyed to the air in form of ammonia, and brought to the earth dissolved in rain and snow, in which it may be thus detected: take about 2℔s. of rain, which has fallen during a thunder-storm (as this rain will contain most ammonia; any rain will do for this experiment, but the quantity of ammonia will be greater in the first fall of rain than after a continued rain for some days, as the greater bulk of ammonia will be brought down by the first rain,) add two or three drops of hydrochloric acid (*syn muriatic acid*, or *spirits of salt*, which is composed of a chemical compound—chlorine and hydrogen) and evaporate until only a few drops are left in the evaporating basin. Add a small piece of caustic lime, and the peculiar smell of ammonia will be manifest. One pound of rain contains about one-fourth of a grain of ammonia; so that, calculating the fall of rain on 26,910 square feet to amount to 2,310,000 ℔. in the year, this surface will receive 71 ℔. of ammonia. The offensive smell of the perspiration from the bodies of men and animals is owing to the ammonia. The employment of animal manure in the cultivation of grain, &c., is the most convincing proof that the nitrogen of vegetables is derived from ammonia; for the quantity of gluten in wheat, rye, and barley, is so different, that there must be a cause. This cause is solely owing to the different modes of culture. An increase of animal manure not only increases the number of seed, but also the quantity of gluten, a body rich in nitrogen, in the seed. The action of animal manure, in as far as regards the appropriation of nitrogen, depends upon the formation of ammonia. 100 parts of wheat grown on a soil manured with cow dung, a manure containing the least quantity of nitrogen, produced only 12 parts of gluten, whilst the same quantity grown on a land manured with human urine, a manure containing the largest quantity of nitrogen in form of carbonate, phosphate, and lactate of ammonia, produced 35 parts of gluten, the largest quantity that can be produced. On the quantity of gluten in the grain depends the quantity of food which men and animals take as nourishment, that is to say, the larger the quantity of gluten the lesser bulk of food is requisite, and *vice versa*. Rice contains least nitrogen of all grain.

"The barren soils on the Peruvian coast are rendered fertile by means of the manure of sea birds—a substance called guano, consisting chiefly of salts of ammonia, which salts must inevitably have yielded nitrogen to the plants growing on these soils. It is ammonia which yields the red and blue colouring matters to flowers.

"It should be the care of the agriculturist, so to preserve his manures, that they should serve as nourishment solely to *his* plants. A heap of manure lying unemployed on his field, is of as much use to his neighbours as to himself, because the salts of ammonia, which are contained therein, being extremely volatile, are carried away into the air. The ammonia which is thus constantly emitted from manure heaps, is reconveyed to the soil by means of rains; in this manner plants receive a larger quantity of

ıan they would obtain from the air
e great influence of ammonia on the
plants depends not so much on the
he same, as on the manner in which
to them ; it must therefore be our
ıt the nitrogen into a form capable
ropriation by the plants. Thus, a
f your success in farming depends
g of the ammonia of your farm-yard
How this is to be effected I shall
in my second lecture, under the
sures."

ond lecture, as we before re-
the one to which we doubt not
tion was given on its delivery :
useful observations. Take the
n the supply of *phosphates* to the
xample :—

xt deficiency in your lands, which
etected by the eye, is the want of
which forms the bulk of the earthy
of bones, of *sulphates*, of *alkalies*,
ers capable of yielding nitrogen, in
r assimilation, to plants. In order
the vast importance of phosphates,
say, that a crop of wheat removes
40lbs. of phosphates from every acre
hinted to you, in the first lecture,
iciency should be supplied by bones.
ıat are bones? *Unboiled bones* con-
er cent. of the phosphates of lime
ia, and 45 per cent. of gelatine or
l bones consist wholly of phosphate
magnesia. As we have only to do
hates here, we shall make use of
, and not trouble ourselves at present
ıe or glue. As our object in ma-
st be to offer to the plants their
t in a state fit for assimilation
n a soluble state,) it should be our
effect this in the best and cheapest
sible. This can be done either by
bones very minutely, or, better by
olution of the bones. We shall
the latter method, which I remem-
heard recommended by Professor
which has proved very successful.
n dissolving the bones in sulphuric
of vitriol. For the purpose of re-
he want of *phosphates* in your lands,
owing ingredients :—

oiled bones	200 lb.
....	300 lb.
riol	80 lb.

es into a large but low wooden tub,
e above-named quantity of water
pour the acid in a gentle *stream*
ture, another person stirring all the while. The tub must be large, as the mixture rises considerably, owing to a small quantity of carbonate of lime (chalk) contained in the bones, which, being decomposed by the sulphuric acid, gives off carbonic acid gas. You will find no difficulty in this process, as I have already shown you how it is to be managed. The only necessary precaution is *to pour the acid into the water*, and not the contrary, lest it should spirt into the eye and cause blindness.* In this process the following chemical change is effected : the oil of vitriol being a stronger acid than the phosphoric acid, seizes on the lime and magnesia forming *sulphate of lime*, or gypsum, with the first body, and *sulphate of magnesia*, or Epsom salts, with the latter. Now Epsom salts and phosphoric acid (which is set free) being soluble, are dissolved in the water, whilst the gypsum, being but slightly soluble, falls to the ground, and takes the place of the bones, so that to all outward appearance little change has been going on ! Allow this mixture to stand over night, and give it a stir whenever you have an opportunity. As not all of you possess water-carts, and even when you do, the gypsum might stop up the holes of the cart, it will be better to mix the fluid with sawdust, or with good dry soil, or with the ashes of coal. These several substances will drink up the fluid, and you continue adding them till the whole forms a stiff mass. Take it out and spread it on places where it will easily dry : if you can dry it by heat, it is all the better because the quicker. When this mixture is thoroughly dry, add to it :

100lb. of Peruvian guano,
100lb. of carbonate of soda,

mix these ingredients well together with your bone preparation, and it will be then ready for use. The additions of guano and carbonate of soda are to supply the wants of the soil in alkalies, sulphates, and ammonia.

"The above-named compost will supply a statute acre of land with manure, and is to be sown in drills.

"This compost will provide the *green* crops with nutriment ; sufficient *phosphates* will remain for the production of the wheat, but *not* sufficient quantities of alkalies, &c. For this reason you must give your wheat, when it has reached one or two inches in height, a top dressing of 100lb. of guano and the same of carbonate of soda, a mixture of which Professor Playfair highly approves. Thus the land will receive sufficient manure for a rotation of four crops ! The expense of the whole compost, consisting of bones, acid, guano, and carbonate of soda, will only amount to £3 1s. 4d. thus:

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*If perchance such an accident should happen, the best remedy is to wash the eye directly with soap and water, and afterwards with pure water. A piece of soap should always be at hand to guard against the evil.

	£	s.	d.
200lb. of bones	£0	7	0
80lb. of acid................	0	8	4
200lb. of guano	1	0	0
200lb. of soda................	1	6	0
Total	3	1	4

"If this compost be applied in the manner I have mentioned, I do not hesitate to say that you will then have laid the foundation for a more permanent improvement of the soil; and, should the weather prove favourable, you will have an increase of produce at a less expense and less labour than you have been used to."

On the subject of manures the lecture contains many excellent remarks. The various fertilizers are placed in the following order:—1. *Human urine and excrements*, on which the lecturer remarks:—

"These are of the highest value as manures, and yet how are they wasted! The urine of man contains all the soluble salts, and the excrements all the insoluble salts of the soil. They are both peculiarly adapted as a manure, as they contain not only ammonia, but also alkalies, phosphates, and sulphates, in the relative proportions in which they exist in your cultivated plants. The urine of man contains six times as much ammonia as that of a cow, and thirteen times as much as that of a horse. The Chinese, who are the most skilful agricultural people in the world, scarcely use anything else on their corn fields; indeed the laws of their land do not allow of its being thrown away, and and reservoirs are placed in every house, wherein they are carefully preserved. Their smell is chiefly owing to ammonia, which is contained in putrid urine in large quantities, as carbonate of ammonia, a very volatile salt. This ammonia is, however, of great importance to agriculture, and should be very carefully preserved. The best means of effecting this is to add gypsum or sulphate of lime to it, which decomposes this volatile salt of ammonia, and forms a salt—sulphate of ammonia—which is not volatile. The requisite quantity of gypsum amounts to 1-7th of the weight of the excrements. As the solid excrements contain but small quantities of ammonia, it is well to mix with them the soot of your chimneys; the charcoal of the soot will remove their smell, and be likewise a good addition, as soot contains sulphate of ammonia, a salt to which its beneficial effects are chiefly owing. The addition of gypsum is, however, likewise necessary. They should never be mixed with quicklime, because, although it will destroy the smell, it will drive out the ammonia; *indeed you should make it a rule never to add quicklime to any manure which contains ammonia,*

"Generally the English are not
throwing money into the pockets of fo
and yet they do not grudge to pay t
bones, whilst in London, and many ot
towns, they annually allow thousands o
them, and other salts, equally valu
form of liquid and solid excrements[*]
into the Thames and other rivers, and
their waters! I am not aware that an
you preserve these excrements, and yet
enough impress the importance of the
you. Only consider that the urine
grown man in a year is able to produc
of wheat! Give the excrements but o
the result on vegetation will show y
important ingredients they must contain
will save yourselves a great outlay in g
bones if you preserve them, for the ur
tains all the valuable salts of guano, a
not in such quantities. You must n
of improving the soil, unless you gi
those ingredients of which you have dep
If you wish to make yourselves a grea
in buying other manures preserve thes
ments in a brick reservoir, and add fr
to time soot and gypsum, so as to re
smell and to preserve all their ingredien

2. *Farm-yard manure*, including th
of cattle.—3. *Bones.*—4. *Guano.*—5.
clay or marl.—6. *Sulphate of lime or*
—7. *Slaked lime.*—8. *Chloride of so*
common salt,

"As a manure, depends, in some
probably upon its decomposing the sulp
lime contained in soils into sulphate
and chloride of lime, from which form
plants derive their sulphur. It is also
lated by plants as such, and may, in som
provide plants with soda. You have no
it beneficial to your soils, which, as you
are very deficient in sulphates. The b
to make use of salt, is to slake caust
with a saturated solution of it in cold
Cold water takes up more salt than
water, for which reason it is to be disso
cold water. By means of this proces
and chloride of lime are formed, whic
stances are most valuable manures. 30
of caustic lime, the quantity usually ap
an acre of land, will require about 400lb.
dissolved in water, in order to effect this
position. This compost will be foun
valuable for lands deficient in alkalies."

The use of salt, as a manure, is bu
practised, even in Cheshire, where i
digenous. This is owing to the wa

---

[*] The earthy matter of bones are containe
excrements of full grown men and animals.

rfect knowledge of the mode in
should be applied: alone it is very
m to prove injurious to vegetation,
npost heaps, where lime is used,
e think, be successfully applied.
also with soot for potatoes in the
n of 4 of soot to 1 of salt. The
mon mode of application is, how-
hand tillage, as described in the
igh we prefer a larger quantity of
a thorough mixture with the lime
tate, allowing them to be together
'our months, under cover, and re-
turning them.

ashes of peat and coal.—10. *Saw-*
The ashes of wood.—12. *The refuse*
ks.—13. *Nitrate of soda, and car-*
soda.—14. *Charcoal.*

cturer, who, it must be remem-
as addressing Cheshire farmers,
ludes :—

ave now heard how you are to supply
ncies in your lands. Your light soils
arled, and be furnished, by means of
mo, and soda, with those ingredients
lants stand in need, and which do not
antities sufficient in your lands. We
t the most efficient methods of pre-
ur manures, and have seen the im-
f that most essential ingredient—am-
nich has hitherto been lost to you. I
ve clearly shown the necessity of pre-
l those manures with which nature
erally provided us; and of resupplying
ingredients to a soil which the soil
ed. And here again let me remind
necessity of retaining potatoe tops on
which have yielded them! If you
ke them away and place them on the
o rot, be careful to carry that portion
ghill which contains them to that field
they have grown. These tops contain
ssential part ot the straw of wheat, I
cate of potash, that it is absolutely
to restore them to the field. In the
re you have been accustomed to keep
y have mostly been conveyed to fields
ve never yielded them. It is true that
putrifying straw we restore silicate of
t the wheat plants which immediately
potatoes, require that portion of pre-
cate of potash which the potatoe tops
How are we otherwise to account for
ty of the soil in silicate of potash, than by removing and not restoring these potatoe stalks? How can we account for the fact, that in many, many cases the least wind or a slight rain lays your wheat plants prostrate? Only by the want of silicate of potash; or, with other words, of the body of the straw which is the cause of its stiffness! I likewise hear, that, contrary to your contract, you sell the straw of your wheat, and as a substitute, promise to buy a certain quantity of bones for every ton of straw you sell. Bones are a good manure; but even when you buy them as a substitute for the straw you do not add them to the arable land which has produced the straw, but to pasture land! But supposing you did lay these bones on such wheat land, what would they supply? Nothing but phosphates of lime and magnesia, of which the ashes of straw contain only from 3 to 5 $^0/_0$! The ashes of straw consist, for the greatest part, of silica, silicate of potash, sulphate of potash, &c. and you will supply potash with bones! You have heard that in the absence of alkalies consists the poverty of your soils, and yet you would impoverish it more and more. The want of potash in your soils is explicable only by the secret sale of your straw and the addition of nothing! The only condition under which I would allow the sale of straw would be on applying to the land, for every ton of straw you sell, a mixture of 15lb. of silicate of potash, 50lb. of guano, 10lb. of carbonate of soda, and 25lb of boiled bones. A mixture something like this would amply compensate for the loss.

"I must now call your attention to a subject which strikes me as one of the highest importance. It seems as if you paid no attention to the seasons, as you are generally some weeks behind other agriculturists in the sowing of your crops. It is very necessary, in this country, to make as much use as possible of our short spring and summer, and to manage to get the crops in before wet weather sets in. The land, for example, which is intended for the growth of wheat, should always be cleared by the first week of October, in which month the wheat should also be sown. Potatoes should be set in the first days of April, and not, as you are wont to do, at the end of April or the middle of May! If they are planted so late, the wet season falls in before you have taken them out of the ground; the consequence is, that the wheat, which is not cut until the crops of potatoes are removed, is soaked through, laid prostrate, and greatly deteriorated by the weather, thus fetching an inferior price. I am not prepared to tell you how the rot in potatoes is to be prevented, nor have I read or heard of anything which clears up the matter. I do not think it can be owing to the soil, because potatoes are found to rot in some parts of a field and not in others, although the land consisted of the same ingredients in all parts. It cannot be owing to the rain or to the air, because the plants are all equally exposed to these influences. The cause, therefore, must be attributed to the potatoes themselves; and we must try all means in our power to detect the causes of this malady. Perhaps you would do well to try the following rules in practice:—

"1. The potatoes about to be set should be of a kind in which the rot has not yet made its appearance.

"2. *Whole* potatoes are to be preferred to cuttings: the smallest and healthiest should be carefully selected from a heap, cleaned, and put away in a dry but cool cellar.

"3. *Particular care should be taken not to set any potatoes which have sent forth shoots in cellars*, as it is possible that the rot may be attributed to this cause. I hear that it is a general practice amongst you to select such which have already sprouted, as you imagine that these are sure of growing. You may depend upon it that potatoes with healthy eyes will produce more vigorous plants in the soil than those which have begun to grow in cellars.

"4. They should not be set later than the early part of April; neither be planted too deep nor so close as they are generally planted in this county. The manures I have mentioned (guano, bones, and carbonate of soda) you will find advantageous to the growth of potatoes.

"Should you not be able to exterminate the rot, you must produce new crops by means of seeds reared from the tubers in which the rot never appeared. Here again I remind you of the fact that your potatoe crops may be increased by nipping off the buds of the plant, and expending their nutriment on the formation of tubers instead of flowers and seeds. The increase amounts to one-fourth of the weight of the crop; a fact well worthy of your trial.

"Do not forget to restore the potatoe tops to the soils on which they have grown.

"After the removal of a crop of wheat, you should set fire to the stubble on a windy day, and remove the weeds in baskets. They must either be burnt or mixed with lime, as the dunghill will not destroy their seeds. If you do not take this precaution you must not wonder at your lands being covered with weeds, for you sow them yourselves.

"Your oats should always be sown earlier than you are accustomed to sow them: the middle of March will not be too early, but the middle of April is too late.' The seeds of oats, as well as those of wheat, turnips, and rye-grass, should be soaked in a solution of human urine, or in a solution of guano in water, at the rate of 1lb. of guano to two gallons of water, till they begin to sprout, as it should be our object to raise the seeds quickly, in order to preserve them from being eaten by birds and insects; and by means of the supply of nourishment afforded to the seed, to raise a healthy and strong plant. Particular care must be taken to select good seeds. The soaking should take place in a butt, standing in an inhabited room, and the seed should not be more than three days in soak.

"From the above observations you will infer that your system is liable to the following reproaches:—

"1. Satisfying yourselves with one manuring, containing only one ingredient for three crops.

"2. The growing wheat instead of oats or barley, which crop of wheat cannot enter the ground in sufficient time, because your fields ought to be cleared of their green crops by the month of October, which is never the case, so far from it that I have seen turnips in the soil, in a model farm, in the month of March!!!

"3. The sowing of every crop behind time, so that whether it relates to hay or corn, they are seldom reaped in season.

"4. The selling of straw and other produce, which ought to be consumed on the farm.

"The consequences of all these processes of deficient farming are the impoverishment of your own soils, and a decreasing production; for which, in the above lectures, I have attempted to introduce methods which, if properly carried out, must lead to important results.

"Should I, by these remarks, have awakened your attention to the importance of scientific farming, and should you be inclined to adopt any suggestions I have made, I shall not only feel highly flattered, but have great pleasure in assisting you whenever you require my aid. I trust that my efforts have not been quite in vain, and that I shall have the pleasure of meeting you all again for the purpose of addressing you on topics in agriculture of not less importance than those which I have already touched upon."

FAIRS FOR JUNE.—1, Leicester, Caister; 3, Uttoxetor; 4, Witham, Rugeley; 5, Malmesbury; 6, Rudgeley, Dalton, Oldbury; 7, Montgomery; 8, Ravenglass, Gorlestone; 10, Banbury; 12, Haverfordwest, Prescot; 13, Ross, Whittlesea; 14, Hailsham, Aylesbury; 17, Taunton, Grimsby; 18, Bradford, Nantwich; 19, Northampton, Langborn; 20, Kidderminster; Hornby; 22, Horncastle, Chippenham, Market Drayton, Wellington, Macclesfield; 24, Cambridge, Kirkham; 25, Bolsover; 26, Pershore, Hitchin; 27 Taunton, Wigan; 28, Yeovil, Bolton; 29, Spalding, Bath.

MANURES.

ꞏd are the latest prices of several sorts
:—

, 16s. per qr.
Bone, 15s. per qr.
Guano, £8. per ton. 15s. per cwt.
)s. to 12s. per cwt., according to
.
t, £6. to £6. 10s.per ton
:, £6. per ton
ıt the water side, 32s. 6d. per ton;
and housed, 38s. to 42s. per ton.,
Soda, 15s. 0d. (duty pd.) per cwt.
ıtash (saltpetre) 26s. per cwt.
n for Turnip Fly 10s. 6d. per packet,
ıt foı three acres.
' Ammonia, 24s. per cwt.
' Lime, 12s. per cwt.
£3. 12s. 6d. per hhd. sufficient for
:res.
!8s. and 42s. per cwt.
ır Destroying Worm on Turnips, 16s.

𝔗𝔥𝔢 𝔐𝔞𝔯𝔨𝔢𝔱𝔰.

ꞏrican accounts would lead us to sup-
ve are to be literally inundated with
ınd Western wheats and flour. The
'he end of April represent the naviga-
ꞏe, and the utmost activity as being
n getting ready for an extensive ex-
FLOUR *from the Western States was*
l in the Montreal markets at from 28s.
' barrel for best brands, though it was
barrels had been sold in England at
n board there. Upper Canada WHEAT
ıt 5s. 9d. to 6s. per 60lbs. Freights
l to be 4s. per barrel for Flour, and
' quarter for Wheat.

ıly of English Wheat was moderate
ı ult.: fine quality sold readily at last
ꞏrices, but the middle sorts dull sale,
lower.
for flour is good, and prices supported.
Barley is 1s. per qr. dearer, and in
ıd, and English Barley supports late

ıd Grey Peas are each 2s., and white
ꞏr qr. dearer.
ivals of Oats are large, but the con-
weather gives us a good demand, and
. advance has been generally obtained
ıg.
re quoted as follows:—

ockets	£7 0	to	£9 0
Pockets......	6 2	,,	6 10
ıter	6 12	,,	6 18

LONDON, May 27.

		Per Qr.	
WHEAT, Essex and Kent, new, red		56	60
White..................	58	60	64
Irish..................		50	54
White		52	58
RYE, old		30	36
New		36	—
BARLEY, Grinding		28	30
Malting		32	34
Chevalier............		34	36
Irish................		28	32
Bere................		26	28
MALT, Suffolk and Norfolk		60	62
Brown		56	58
Kingston and Ware		60	63
Chevalier..............		60	63
OATS, Yorksh. & Lincolnsh., feed		21	22
Potatoe................		22	25
Youghall and Cork black..		21	22
Cork, white		21	22
Dublin		21	22
Waterford, white		21	22
Black		21	22
Scotch feed		22	23
Potatoe................		23	25
Limerick................		21	24
Londonderry		21	22
BEANS, Tick, new		34	36
Old, small		38	40
PEAS, Grey		33	35
Maple		34	36
White		33	35
Boilers		32	36

SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..41
Mustard, White...... 7 10
Brown .... 8 11 per bush.
FLOUR, Town-made — 50
Suffolk.... 40 42 per sk. of 280 lbs.
Stockton and Norfolk .... — 40

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	42	44
Hamburgh..............	40	42
Rostock	40	42
BARLEY	20	—
OATS, Brew	16	17
Feed	14	15
BEANS	19	20
PEAS	23	25
FLOUR, American, per barrel	23	25
Baltic	23	24

LONDON AVERAGES.

			£.	s.	d.
Wheat	5232	qrs.	2	16	7
Barley	592		1	7	8
Oats	20798		1	0	4
Rye	61		1	12	0
Beans	1216		1	8	10
Peas	414		1	10	0

SEED MARKET.

	s.		s.
Canary, per qr.	50	to	58
Carraway, per cwt.	50	to	54
Clover, red, English	60	to	74
„ „ Foreign	64	to	74
„ white, English	100	to	130
„ „ Foreign	84	to	125
Coriander	12	to	18
Hempseed, per last	34	to	36
Linseed Cakes, Eng. p. 1000	£9 10s.	to	£9 15
„ „ Foreign, p. ton	£5	to	£7 10
Mustard, white, per bushel	5	to	6
„ superfine „	6	to	8
„ brown „	14	to	16
Rapeseed, English, per last	£24	to	28
Tares, English, winter p. bushel	3	to	5
Foreign „ „ „	3	to	5

LIVERPOOL, May 25.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ⅌ 70lbs.	8	4	8	8
Ditto, red	8	0	8	2
Irish white, new	7	10	8	2
Ditto, red	7	6	7	10
Oats, Eng. and Scotch, ⅌ 45lbs.	2	10	3	2
Welsh	2	8	2	9
Irish, new, best mealing	2	8	2	11
Barley, English, per imp. qr.	32	0	35	0
Irish, Scotch, and Manx, per 60lbs.	4	4	4	9
Feeding	3	0	4	0
Rye, per imp. qr.	26	0	30	0
Beans, English, per imp. qr.	35	0	37	0
Irish, &c.	32	0	34	0
Foreign	34	0	36	0
Egyptian, per 480lbs.	29	0	30	0
Peas, English, per imp. qr.	36	0	42	0
Foreign	34	0	42	0
Malt, per imp. qr., fine	58	0	63	0
Flour, English, per 280lbs.	41	0	43	6
Irish, extra-fine	41	0	43	0
Foreign, duty-paid, per 190lbs., U.S.	31	0	32	0
Canadian	29	6	31	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	22	0	28	0
Irish	21	6	22	3
Indian Corn, per 480lbs.	36	0	38	0

WAKEFIELD, May 24.

The finest samples of wheat have met a slow sale at barely so good prices as last week; all other sorts must be noted 1s. per quarter lower. The demand for barley is very limited, without material alteration in value. Oats and shelling each command rather higher rates. Beans are in request, at an advance of 1s. per quarter.

CHESTER, May 25.

	s.	d.	s.	d.
Wheat, white, 75lbs.	0	0	9	0
Ditto, red.	0	0	8	9
Oats, 46lbs., old	0	0	3	3
Ditto, for seed	0	0	0	0
Grinding Barley, per 60lbs.	4	6	4	8
Malting ditto, 38 qts.	5	0	5	3
Ditto, inferior	0	0	0	0
Beans, new, per 80lbs	0	0	6	0
Ditto, old	0	0	0	0

DUBLIN CORN EXCHANGE—May 24.

	s.	d.		s.	d.
Wheat, white (per brl.)	34	0	to	35	0
„ red do.	32	0	to	33	0
„ inferior, do.	28	0	to	30	0
Oats, feeding, new	11	0	to	11	6
Flour, first (per cwt.)	19	0	to	20	0
„ second do.	17	0	to	18	0
„ inferior do.	13	0	to	16	0
„ third do.	7	0	to	12	0
Oatmeal do.	10	6	to	11	0

Cattle Markets.

LONDON, SMITHFIELD.

May 27, 1844.

	⅌ st. of 8lbs.				
	s.	d.		s.	d.
Inferior coarse beasts	2	4	to	2	6
Second quality do.	2	8	to	2	10
Prime large Oxen	3	0	to	3	6
Prime Scots, &c.	3	8	to	3	10
Coarse and inferior Sheep	2	8	to	3	0
Second quality do.	3	2	to	3	4
Prime coarse woolled do.	3	4	to	3	8
Prime Southdown do.	3	10	to	4	0
Large coarse Calves	3	4	to	4	0
Prime small ditto	4	2	to	4	6
Suckling Calves	0	0	to	0	0
Large Hogs	3	0	to	3	8
Neat small Porkers	3	10	to	4	2
Pigs, quarter old store, each	0	0	to	0	0

LIVERPOOL, May 20.

We have had a large show of Cattle at market to-day, which met with dull sale at last week's prices. Beef 5½d. to 6d. Mutton 6½d. to 7d. per lb.

Fairs in North Wales for June.—Dinasmouthy, 2; Carmarthen, 3, 4; Chirk, 14; Wrexham, 16; Langhorne, Rhydyllafray, 19; Llandrillo, Llanrwst, 21; Newcastle, Holt, Bettus, Newburgh, (Anglesea) 22; Llandelga, 23; Flint, 24; Llanuwchllyn, Bangor, 25; Llangerniew, 29.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

JUNE—1844.

THE DROUGHT.

ix years are said to have elapsed is country was afflicted with a de- drought equal to that under which present suffering. Partial dryness ave occurred in particular places e period we have named, but the burnt up state of the country is l. All our accounts agree in descri- as altogether most fearful—no pas- ass—no hay, but upon cold wet ws—spring corn upon poor or thin ot six inches high, with wheat in cases the same—potatoes planted but et germinating—turnips sown, it is but no appearance of plants—win- tches all consumed, with nothing pply their place;—this is, in a few , the present condition of our coun- Many devices must be had recourse order to supply the deficiencies of r food for our cattle, and, therefore, d every thing we exhort our readers stir themselves in time, so as not to their live stock to sink in condition— e loss, the expense, and labour are ma- ly increased when this once happens.

ung or dairy stock may be fed with a are or compound of straw cut with food, (where it can be obtained,) and derate quantity of bran, *which will be* found to answer very well; but should the milk diminish in quantity, or the green food be unattainable, the cows may have their food moistened with their linseed gruel, the quantity of bran being increased. Potatoe-tops, where they are to be had, cut with straw, will be found useful for either horses or cattle; but the former will of course require their allowance of corn to be slightly increased. We speak with confidence of the value of potatoe-tops used in the mode we have described; and after the experience of an entire season are so well satisfied of their value that we shall invariably consume them in that way.

There is much foreign produce brought over to the great out-ports, of the importance of which farmers in the interior know but little; much of this is attainable at reasonable rates, and would supply in a scarce season the want of home-grown fodder—and it is these productions to which we would at present direct attention, for turnips may yet turn out well, and of autumn feed there may be abundance, but for the winter and early spring it is that we are most anxious; too many turnips we know to be bad for in-calf cows, and for any stock a certain quantity of dry food is necessary. It is then to obviate the certain want of hay and straw that we call attention to substances hitherto unthought of as articles of food—they ought to be such as contain as nearly as may be the chemical constituents of hay, and oats or barley straw, and be attainable at a moderate cost: could such things be brought to market we would engage to find purchasers of almost any quantity of them.—*June* 15.

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The Weather, June 27.—Distressing accounts of the amazing drought continue to be received from all parts of the country. From Berks it is reported that 8 acres of hay-grass produced but one load of hay. This we should have been almost inclined to doubt but that we were assured, a fortnight ago, by a highly respectable friend on the borders of North Wales, that the produce of 8 acres of hay upon his farm was brought home on a one-horse cart. His farm we know to be highly cultivated, and to consist of some as good soil as is to be found in the Welsh marches. Partial showers have fallen pretty generally, but they have been so light or of so short continuance that an injury rather than a benefit has resulted.

◆

SPRING FEED.

I perceive several of the agricultural papers are recommending means for increasing the quantity of fodder for use next winter; but none, that I can find, look forward to the spring. Now it appears to me that February, March, and April next year, will be the months more puzzling to large stock farmers than the winter months, particularly if the season should be a hard one. What, Mr. Editor, is to be done? Hay and straw will be scarce and dear, and though turnips may turn out well, and be tolerably cheap, yet they cannot be given to cattle alone. What shall we do? Can any of your readers suggest dry food of any kind which can be obtained as a substitute for hay and straw? Will leaves of any sort be useful? Crushed gorse will no doubt be had recourse to in places where it is to be obtained, and *will prove highly* valuable. Pray stir up some of your very able correspondents u this most important subject.—*Devonia, J* 21, 1844.

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THE POTATOE FAILURE.

We hear and read much on the failure the potatoe crop; and there are many n trums published with a view to obviate t and some of whom proceed from par who do not seem to know any thing u the subject they are writing. We are from stating that our nostrum is infallib but we would advise *all* who wish to ha and to preserve good sound seed and p toes to raise them in what is emphatic called by Paddy *new ground*, and which nothing more nor less than potatoes rai after hay, or first, a crop of oats and potatoes. In Ireland this has in no insta failed, and our Irish neighbours, altho not the best farmers, are well acquain with the art of raising the staple article *food* in that country.—*Amor Patriæ.*

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AGRICULTURAL QUERIES.

I should feel much obliged if you, or of your valuable correspondents, could me any information as to the depth the roots of wheat, barley, &c., strike d into the soil in search of nourishment, cannot see why it ought not to be a and a *guide*, for those who are drai their lands, in regulating the depth, to their drains by the depth the roots of strike down into the soil; as it is very known that wherever water is present will not flourish.—*T. S., Surveyor,* *lington.*

◆

I am desirous of draining a piece of heavy land, with either stone or tiles, placing the top of the draining material inches at least below the surface of the and I shall be much obliged if some of practical correspondents will favour with simple and practicable directions ascertaining the degree of *tenacity* and *ness* of the soil and subsoil, so as to stance the drains should be apart to lly draw off *all* stagnant and super- water, and produce the *greatest* of profit from the land during suc- years. I shall also feel obliged by nformed what is the *greatest* and that should be given to stone, tile, drains respectively, with the sizes that are most suitable for soils of t degrees of tenacity; also the kind ring that should be in immediate with the draining materials, par- in wet subsoils of a sandy nature: ll be glad to know what kind of uation, and other circumstances the above kinds of materials are pted to, accompanied with a com- statement of the advantages at- the use of either of them as regards ss, effectiveness, and durability?

2nd. I shall feel obliged by being d of the best method of growing on summer fallows, for being d in in a green state; and shall be now when it should be sown, and ntity of seed to be used per acre; time for ploughing it in, and the time that it should be done before should be sown with wheat?

I shall be favoured with replies in nth's *Herald.—A Small Proprietor*, *ncoln*, *June 24th*, 1844.

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-SHARING.—In a late number of *lener's Chronicle*, a Sussex Farmer, r to an enquiry of Mr. Grey, of gives the following description of useful operation. We wish we the practice of broad-sharing, of me utility of which we have long nvinced, prevail more generally. in the present season might with vantage, from the rapidity of the brought under this operation, and h hybrid or Scotch yellow turnips, s provide abundance of food for ep and cattle during the winter:— sharing is simply paring the ground to the depth of about two inches, which is sometimes effected by attaching a share of 18 inches in width to the Sussex wheel-plough, which is drawn by two horses; sometimes by the Sussex cultivator, an iron implement of five feet in width, with shares 12 inches in width, drawn by four strong horses; this can only be used where the land is level on the surface; if the land is in ridges or otherwise unlevel, the plough is used; after this the land is harrowed, and the rubbish collected and burnt."

SPRING SOWN WHEAT.—A correspondent in the *Mark Lane Express* observes, as I have seen but few observations in your valuable journal upon spring sown wheat, you probably will not consider me intruding in begging your insertion of a few brief remarks upon the subject. Spring sown wheat is, at all times, allowed to be by practical men a very casuality crop to cultivate, from obvious reasons. In the first place, it is much more tender in its nature than autumn sown (I mean that sort which is generally sown in spring—Talavera or Malaga,) and, therefore, more liable to blight; and it is also more precarious to harvest, because if the weather proves showery and unfavourable, it *much* sooner begins to chit or grow, thereby injuring the quality of the berry to a very considerable extent. Again, we never get the yield from spring as from autumn sown. And why is this? The facts are very plain. That which is sown at the proper season (autumn,) if the land is in good condition, tillers out in numerous blades, and spreads over the ground in every direction, each tiller forming an ear in its season; but that sown in spring has not sufficient time to expand and throw out sprouts or tillers, being drawn up by the sun rapidly, and coming to perfection with a single ear wide set in its meshes. I am induced to make these observations publicly known, for I am well aware there are many people who are acting contrary to the opinion I have stated; but if they will only exercise common understanding in the matter, their eyes will be immediately open, and not lose the season in autumn by waiting till spring.

Swedish Turnips.—A correspondent in a London paper observes, knowing the value of turnips at this season of the year, and particularly in the present year, when the grass is still very short, I beg to say that I have swede turnips at the present moment (on which my cattle are feeding) perfectly sound, and I have nearly sufficient for another month. They have been kept by placing wattled hurdles at a cart's breadth apart, and sloping outwards at a gentle inclination, not lined with straw, which prevents a free circulation of air to permeate the heap, and carry off the damp vapours; the turnips are then piled up as high as they will stand, and brought to an edge, and thatched after the heat has in great measure evaporated, placing only some loose straw on the top to keep out the the heaviest rains. My heap was 40 yards long without a single unsound root. Mangold wurzel I keep in the same way. I find great benefit at this time of the year when they are dry, from allowing the cut turnips to stand for an hour or two in water before being given to the cattle, as they imbibe a large portion of moisture.

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LUCERNE.

To the Editor of the Mark Lane Express.

Sir.—In bringing this subject before your readers I have to observe, that at no former period have I experienced the value of lucerne, as during the present protracted drought; I have now nearly finished my first crop, which I have been cutting green for horses and cows, much of which measures in height 36 inches, and is very thick on the ground; my second crop is from 24 to 26 inches high, and equally as thick a plant as the first. I am now about cutting this for hay, and I think I have more weight per acre of my second crop than is *grown this season on four or five acres* (first crop) of the general average of pasture grounds now mowing. It does not appear to be in the least affected by the severe drought, which I attribute to the very great depth the roots run down; for I have heard (and which I doubt not) instances of lucerne roots being found from 10 to 14 feet below the surface.

I would again urge all, whether farmer or not, to try and grow lucerne, for of all summer food for horses this is the very best; I am inclined to say likewise nothing can be better food for cows, for my own have lived entirely upon it the last three weeks, my feeding pasture being quite burned up for want of rain, and have produced a full quantity of butter.

It requires to be well manured and kept perfectly clean; but as I get four, and sometimes five crops in the season, I find it answers my purpose exceedingly well.—*West Norfolk, June* 11.

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THE BENENDEN NEW TILE MACHINE.

This is a new tile-making machine, for which the agricultural world are indebted to T. Law Hodges, Esq., at Benenden, assisted by Mr. K. Hatcher, a self-taught potter and tile-maker, of considerable scientific qualifications and practical knowledge. We have had the gratification of inspecting this machine at work; and as it possesses many points of improvement over any other which we are acquainted with, a slight notice of it will not perhaps be unacceptable to our agricultural and scientific readers. The more recent tile-making machines are all constructed on the principle of forcing the clay, in a properly tempered state, through a die fixed in an iron box, so that it may come out, if the expression may be allowed, in a continuous stream of pipe, which is then cut off to the proper length for forming separate tiles. The clay must, of course, be completely mixed and amalgamated in a pug-mill; and when, as in Mr Etheridge's, the die was fixed to the bottom of the pug-mill, the operation appeared reduced to the greatest degree of simplicity of which it is susceptible. The machine constructed by Mr. Reid is also exceedingly simple: but this, like Mr. Etheridge's, is stationary which is found in practice to be comparatively disadvantageous. The tiles having to be dried by exposure to the air for some days before they are burnt, must be taken by the hand from the stationary machine, placed on barrows, wheeled to the shed, and again taken from the barrows and placed in piles. As the sheds under which these piles of raw tiles are placed are upwards of 100 feet long, in order to transfer the raw tile at one motion from the machine to the rows of piled tiles, the machine must of course move along the rows from one end to the other. This is done by the Benenden machine, which we will now describe. This implement has the appearance of a form about 18 inches wide and 10 feet long, standing between two upright battens near to one end. On the form, and between these two uprights, is a square iron box, in one side of which are placed the dies from which the stream of pipe rolls out on to the form. Fitted into the top of this iron box is an iron cylinder, having a close iron grating or sieve to intercept small small stones or grit at the bottom of it. This cylinder, being charged with tempered clay, is placed on the iron box.

A piston, worked by a toothed rack and pinion and common winch, presses the plastic clay down from the top through the dies, three continuous lengths of pipe, 1¼ inch bore, emerging thus at one time. This pipe is too soft to admit of being pushed along the form, so it is assisted by an endless web, on which it falls from the dies, and the pace of which is regulated by the supplying power of the machine. As the rolls of pipe progress along the form, portions of the end of it are continually cut off, of the proper length to form one-foot tiles. The instrument by which this is done consists of a small round staff, which is inserted into the orifice of the pipe, and on which the tile is carried away after being cut off by a piece of fine wire, ingeniously attached to the staff. The shed in which the machine works is about 108 feet long, and of sufficient width to admit of the machine being wheeled along in the centre, and of a boy to work on each side of it, in removing the tiles from the machine, and placing them in a row along under each side of the shed. The *modus operandi* is this: a stout lad brings a cylinder, charged with prepared clay, and having received a cylinder, and emptied and cleaned all the grit from its grating, proceeds to fill that in the same way. A man turns the winch with his right hand assisting the pipe as it issues from the die with his left. If a piece of grit, or a "nub" of rather harder clay affects the shape of the emerging pipe, the piece is severed and carried away into a basket by the endless web, and a new issue of perfect pipe proceeds from the die. During the issue, the two removing boys are kept in full activity. It is estimated that a man and three boys will thus make 5000 tiles per day, and that the price at which they can be sold will not exceed 15s. per thousand for those of 2 inches bore, and 14s. for those of 1¼ inch bore. The greatest advantage of the plan probably consists in the readiness by which the machine and the pug-mill may be transferred from place to place. Both together may hereafter be purchased for about £24, and any considerable farmer or landlord will doubtless find it cheaper to make his own drain-tiles than to buy them, as the cost of carriage has hitherto been a serious item. This improvement must prove of incalculable advantage to the Weald, the clay of which after lying long in clods in the sun, rings like stone or earthenware when struck with a hard substance, and is exceedingly stiff and retentive of moisture. —*Maidstone Gazette.*

DISTEMPER IN CATTLE.

The following, which we take from a cotemporary, discloses a complaint not by any means common: we beg therefore to draw the attention of our scientific readers to it, and shall be obliged to them for any information upon the subject.—Ed. F. H.

"To THE EDITOR OF THE FARMER'S GAZETTE.—Sir,—I beg to ask your advice respecting a disorder which has lately made its appearance among some cattle under my care. It first appeared about four months since in a three-year-old heifer, with large hard lumps each side of the wind-pipe, with difficulty of breathing. I commenced stuping the throat with potatoe water, and continued it for some time; but finding it of no use—the swelling increasing and getting more callous—I applied a strong horse blister to it, which seemed to be of service at the time, but at present it is still getting worse. The second cow of the same age was taken with the same disorder about six weeks ago, I treated her the same as the first one. She seemed to be going on well until this morning, when she suddenly dropped dead. On opening her I found the lumps in her throat full of corrupted matter, and also part of the inside with the lights much swollen. Never hearing or seeing any cattle with the like disorder, I would feel much obliged with any advice you or any of your numerous intelligent correspondents could oblige me.—J. H., Mallow, May 28, 1844."

"To THE EDITOR OF THE FARMER'S GAZETTE—Sir,—One of your correspondents, who signs himself "J. H.," desires a remedy for lumps in the throat of cattle with difficulty of breathing. The disease, as he describes it, is much the same as a sore throat in the human species, and similar to the strangles in a horse. The difficulty of breathing is caused by the pressure of the lumps on the wind-pipe when the disease has been allowed to take head. Stuping, the remedy applied by J. H., was the one of all others most likely to accelerate the progress of the disease, as it brought a further increase of water towards the wind-pipe, which is the very course the disease first takes, and by which the lumps are formed. I beg to suggest the following:—Let the part or parts effected be seared, if possible, with an iron, and then a strong blister applied, and repeated twice if necessary; but should the difficulty of breathing continue, let the beast be tied well to a stake, and burn quantities of damp hay or straw under the mouth, in order to make the animal run water.

"This last I have known to produce good consequences, although it appears simple enough.

"In applying blisters to horn-cattle, it is very advisable to sear the parts before applying, but this is not necessary in horses, their hides being much thinner.—C. P., June 5, 1844."

[To the information given above we may add, that Professor Dick, the eminent veterinary surgeon of Edinburgh, in a paper published in the 4th vol. of the *Quarterly Journal of Agriculture*, 554, agrees with our correspondent in considering this disorder in cattle analogous to sore throat in man, and strangles in the horse. He is of opinion that it is brought on by cold; and also that a tendancy to it, as well as to other diseases, is produced by breeding from close affinity, or, as it is called, in and in; and directs, that as soon as a beast is found to be affected, it be put into a comfortable shed, and supplied with nutritious food, and that sulphate of iron, in doses of 2 drachms for a 3-yr-old be given, or five grains of inodine in gruel, night and morning; that if matter has collected, the tumour must be opened, if not, blistering should be resorted to and repeated. Should this not be found efficacious, ointment, composed of two drachms of iodine to four ounces of lard, should be rubbed in every day till absorption of the tumour takes place; and if it resist these, it should be freely lanced, and a little tow put into the wound twice a-day, smeared with blistering ointment, or dipped in a strong solution of sulphate of copper. Bleeding and purging, he says, may be resorted to in the early stage of the disease.—Ed. F. G.]

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THE ROT IN SHEEP.

The first symptoms attending this disease are by no means strongly marked; there is no loss of condition but rather apparently the contrary; indeed, sheep intended for the butcher have been purposely cothed or rotted in order to increase their fattening properties for a few weeks, a practice which was adopted by the celebrated Bakeley. A want of liveliness, and paleness of the membranes, generally may be considered as the first symptoms of the disease, to which may be added a yellowness of the caruncle at the corner of the eye. Dr. Harrison observes, "When in warm sultry and rainy weather, sheep that are grazing on low and moist lands feed rapidly, and some of them die suddenly, there is fear that they have contracted the rot." This suspicion will be further increased if a few weeks afterwards the sheep begin to shrink, and become flaccid about the loins. By pressure about the hips at this time a crackling is perceptible now or soon afterwards, the countenance looks pale, and upon parting the fleece the skin is found to have changed its vermilion tint for a pale red, and the wool is easily separated from the pelt;

and as the disorder advances the skin becomes dappled with yellow or black spots. To these symptoms succeed dulness, loss of condition, greater paleness of the mucous membranes, the eyelids becoming almost white, and afterwards yellow. This yellowness extends to other parts of the body, and a watery fluid appears under the skin, which becomes loose and flabby, the wool coming off readily. The symptoms of dropsy often extend over the body, and sometimes the sheep becomes chockered, as it is termed—a large swelling forms under the jaw—which, from the appearance of the fluid it contains, is in some places called the watery poke. The duration of the disease is uncertain; the animal occasionally dies shortly after becoming affected, but more frequently it extends to from three to six months, the sheep gradually losing flesh and pining away, particularly if, as is frequently the case, an obstinate purging supervenes.

With regard to our remedial measures, little satisfactory matter can be offered. There are few drugs which the laboratory can supply but what have been tried and found wanting; and though salt has appeared to have had more effect on it than anything else, it must be confessed that hitherto medicine has offered no remedy for this formidable and destructive disease. Prevention must be our chief aim, and it is satisfactory to know that much can be done by means of extensive and general draining; and it is hoped that before long, by the aid of the legislature and the conjoint energy and capital of both owners and occupiers of land, the system will be adopted almost universally, by which alone this disease is likely to be controlled or eradicated; and at the same time increased labour employed on the land, and more abundant crops obtained from the bounty of nature.

It appears that, whether as a preventive or as a cure, salt has a more powerful influence over this disease than any other remedy. Its presence preserves even wet pastures from the disposition to give the rot, for it is well known that salt marshes are free from danger. In what manner salt thus operates it is difficult to explain. The blood in this disease is in a state of unnatural dilution—it is deficient in its fibrous and colouring principles: now, whether salt, which is a combination of chlorine and soda, acts by restoring some portion of those salts of which the blood is deficient, or whether it is prejudicial to the vitality of the flukes and the eggs, or whether it acts by the antiseptic power which belongs to chlorine, we cannot tell, though its influence over the disease is generally acknowledged.

Our own advice as to remedial treatment may be summed up in a small compass. The sheep should be removed from the unsound pasture as soon as possible, either to a salt marsh or the driest pasture that can be found; as much salt may be given as the animals will take with their food; to this the sulphate of iron may be joined. Half a drachm daily for each sheep, with the same quantity of ginger, may be given in nourishing gruel. An aperient should be given once or twice during the treatment, and may consist of one or two ounces of sulphate of magnesia, or a large table-spoonful of common salt dissolved in warm gruel or water. Food should be given in as nutritious a form as possible; and a pint of beans daily will be an excellent diet with good hay on sound pasture.

Though turnips cannot be considered as a cause of rot, yet from the superabundance of water they contain, they are highly prejudicial to sheep that are affected with the disease, particularly if taken whilst a hoar-frost is on them. Calomel has been strongly advised, but the recommendation, as far as I am aware, has not been backed by any successful cases. If tried by way of experiment, about five grains daily, with four of opium, suspended in thick gruel, may be repeated once a day for the space of a week at a time.—*Extracted, by permission, from Mr. Spooner's forthcoming work on the Sheep.*

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BUCKTHORN HEDGES.

We have before expressed our anxiety to see some more cheap but equally useful hedge than our English whitethorn forms for the division and enclosure of fields. The following, taken from the *American Agriculturist,* points to a plant little known amongst us, but of which the writer gives a very favorable account; we should be glad to hear that it has already been tried in this country, and found to answer:—

" *Rhamnus catharticus.*—This beautiful shrub was first used in this country for growing live hedges, by Mr. E. Hersey Derby, of Salem, Massachusetts. He first commenced propagating it by cuttings in 1806, from an individual tree which stood in the venerable Dr. Holyoke's garden in that town. Since that period up to the present time, he has constantly multiplied the species by cuttings and seeds, and independently of ornamenting his own grounds, he has sent plants and scions to nearly every state in the Union. He has at present for sale at his nursery, several thousand of vigorous plants at 13s. 6d. per hundred, with a reasonable discount where large quantities are purchased.

"This shrub flourishes best in rather a moist soil, although it will thrive in any soil that is adapted to the culture of garden vegetables. It is exceedingly valuable for live hedges, on account of its being able to resist any degree of climate in the United States, and of sure growth whenever transplanted. It remains green many weeks later than the English hawthorn, and in the vicinity of Boston, retains its foliage long after the fall of snow. In consequence of its medicinal properties, it is not attacked by any insects, nor devoured by any of our domestic animals.

"As the plants will grow to the height of twelve or fifteen feet, they may be trained over an arch or trellis, and form a beautiful, densely-shaded harbour or walk.

"It is preferable to set out the hedges in in trenches from three to six inches deep and eighteen inches broad. The plants may be arranged in two rows ten or twelve inches asunder, and set six or eight inches apart, placing those of the second row opposite the centre space of the first, thus:—

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When the hedges have acquired a proper height, they should be kept well trimmed, and if desirable, they may be cut into fanciful figures, which the Englisd call *topiary* work.

"The plants for one rod of hedge set in two rows and six inches apart will cost about 4s. 6d., when bought at 13s. 6d. per hundred, and will lasthalf a century and upward. B.

SIMPLE TURNIP-SOWING MACHINE.

The following account of a very simple and cheap turnip drill we take from the Irish *Farmers' Gazette*. The description is that of Mr. Duffus, who has the merit of improving it, and adapting it to two drills instead of one, to which only in its more simple state it was applicable.

Mr. Duffus has the still higher merit of honestly acknowledging its incapability to act perfectly upon very hilly ground where the drills run at right angles with the fall. Mr. D. observes—

"I have just inspected some turnips that were sown with the simple two-drill-machine, which was made under my directions, and exhibited at the show of Irish manufactures and inventions at the Royal Dublin Society: the seeds appear to have been dropped as evenly *and regularly* as needs be. All the turnips on the Villa farm—Roebuck Park—have been sown with it; and the overseer authorizes me to say, that he is perfectly satisfied with its performance. I have not had many opportunities of trying it myself. I tried it, however, when the ground was very dry, and the result was quite satisfactory: again, on Tuesday evening after the rain, I tried it on land undrained, wet, and clammy—the discs did not gather earth in any hurtful quantity; and, I think that when a machine with rollers may be worked this also may be worked. During the several trials I made with it I noted the following good and bad qualities in it:—A person can very easily push it along, and guide it in a straight direction; in most cases it will make a sufficiently deep rut by its own weight, if not, it can be loaded with a stone of a proper weight; it does not collect weeds, or drag the manure, as coulters do sometimes; and, if it be required to re-sow any parts that have refused to grow, and to which a large machine could not be introduced, a man can easily shoulder it up and march from spot to spot with it. But it has this disadvantage: it will not work *well* on steep ground, if the drills are run at right angles to the inclination; the discs, in this case, lose their proper inclination.

"The machine consists of twin discs, each resembling the single disc in Mr. Law's machine; and it is merely in the combining the two that all my improvement consists. To have two discs and boxes instead of one, I consider, would enable the operator to walk in the hollow of the drills, and to sow drills right and left of him much better than he could do one, because, in sowing one, walking in the hollow, he applies his force somewhat awkwardly. That the machine may be fitted to drills of different pitch, the axles of the discs are separate, the one lying over the other, and held at any width by pinching screws, against pieces of iron bolted to the handles. The discs are 14 inches in diameter, shod with iron (perhaps they should be made of cast iron altogether, of a shape, so as not to be too heavy.) The axles are put in on the Mail-patent principle, so that the seed cannot come into contact with the grease, a small piece of plate-iron being nailed over the end of the bush. Having thus, at your request, given what I think a sufficiently long description of this machine, I may remark that the judges at the last show of the Society awarded it the large Silver Medal. My own candid opinion of it is, that for the man who has but little money (as it costs but £1,) and little horse-power, or for little villa-farms, where *petité culture* is carried on, it is a suitable implement; but for the able and extensive farmer it is not at all to be compared with a drill on Wilkie's plan.

"I ought to have stated that when I used the above machine, a light wooden roller had first passed over the drills. I consider rolling after sowing, generally speaking, to be at least unnecessary."

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Agriculture of Cheshire.—At a late meeting of the council of the Royal Agricultural Society of England, Mr. Pusey, M.P., reported the unanimous decision of the judges, in assigning the society's prize of £50 for the best Essay on the Agriculture of Cheshire to Mr. Wm. Palin, of Stapleford Hall, near Chester.

Frost.—There was a hard frost in this vicinity (Albany, America,) on the night of the 21st of May. Ice was formed on some water which stood in barrels, to the thickness of an eighth of an inch, and in some places the ground was frosen. Beans and other tender plants were killed—corn and potatoes that were above ground, were cut down, but not killed. We have just learned from a gentleman from Madison county, in this State, that the damage in that section was quite heavy. That the ground was frozen to the depth of two or three inches, and that great fears are entertained that the fruit is killed.—*Cultivator.*

Welsh Turnpikes.—In the House of Commons on the 24th of June, in answer to a question from General Johnson, Sir J. Graham said it was his intention to bring in a bill which had been prepared in pursuance of the recommendations of the commission of inquiry into the state of South Wales, and which would make considerable alterations in the turnpike laws. If the house should be disposed to adopt the bill, it would be first tried in the six counties of South Wales, and if found successful could be easily extended.—Also on the 25th, Sir. J. Graham said that in bringing forward a measure on the subject of the turnpikes of South Wales, of which he had given notice, he felt it necessary to state briefly its leading provisions. He proposed first to appoint a commission to visit each trust, investigate its state, receive evidence respecting it, and make a report of the real marketable value of its debt; and if, after receiving due notice of their award, a creditor should object to the sum awarded, there was machinery provided for settling whatever differences should arise. When the commission should have visited all the six counties of South Wales, to which alone this bill was to apply, it was further provided that they should report the aggregate value of the trusts to the Exchequer Loan Commissioners, from whom they were to raise a loan, repayable by way of annuity, for the extinction of the debts of the trusts. The first charge on the tolls was to be for the extinction of this loan. At the end of 30 years all the debts were to be extinguished. The repayment of the loan was to be also the first charge on the county rates. When the debts should be all paid off, all the existing acts were to be repealed, and all the existing trusts to be extinguished, and the management of each board was to be vested in a county board, to be composed of *ex officio* members, magistrates chosen at quarter sessions, and representatives of the rate-payers in certain proportions. In this bill there was also a provision for reducing the amount of the tolls, and a limitation was imposed as to distance. The distance between two turnpikes was to be in no case less than seven miles, except on the borders of adjoining counties, when they were not to be less than two from the borders of each county. There was a provision also for the sub-division of the roads, and the expenses were to be borne partly from the tolls and partly from the highway rates. There was also to be a superintendent, appointed by the government, resident in South Wales, for all the six counties, without whose concurrence, embodied in a report to the Secretary of State for the Home Department, there was to be no measure of importance adopted with regard to these roads. He should also, state, with respect to the aid to be drawn from the county rates, in addition to the tolls, that that was to be limited as to the extent of the annual payments, and that the amount of county rates raised for this purpose from each farmer was to be deducted by him from his rent, so that the burden shall fall on the landlord and not on the occupier. He was anxious to introduce the bill with the least possible delay, and if it should be found successful in these six counties, he would have it extended to all Wales.

THIN SEEDING OF LAND.

During the past week a party of agriculturists from the neighbourhood of Salisbury have visited the farms of Hewitt Davis, Esq., near Croydon, Surrey, to investigate and observe the success of his system of thin seeding of land, to which their attention had been called by his pamphlet "On the injury and waste of Corn in thick sowing." The present season, so particularly dry, was deemed excellently adapted to ascertain the value and truth of this theory.

The crops at Spring Park and Shirly farm are excellent and surprising, taking into consideration the soil and the slight quantity of manure. The wheat promises to average under a fair season eight or nine sacks per acre: it is very strong in the blade, and is as thick as it can stand in the drills.

The barley was just coming into ear, and is an excellent crop, far beyond any seen in the journey to Croydon, or indeed in our own great barley district.

The oats were looking amazingly strong, and were as thick and rank even in this dry season as can well be conceived.

The clover was principally cut, but what was seen was quite up to the average of this year.

The beans are very good, and although not high, are yet much taller than the generality this season: they are cudded quite down to the ground, and there is an excellent plant of forward turnips between the ranks. The peas seem to want rain more than the other crops, but they are very good compared with the average.

Swedes are being sown at the time of this visit; and some earlier sown were just coming up.

The wheat on Selsden farm is not so good generally as at Spring Park; but the barley and oats are certainly far beyond an average.

Every one who sees these farms must be struck with their perfect cleanliness: there is literally not a weed to be seen.

Mr. Davis sells considerable quantiti and sometimes mangold wurzel or s which case, as previously stated, h half the value in manure from L Croydon.

The party returned, wondering and s but ignorant to what cause entirely t the fertility they had seen. It is not manure, for according both to Mr. Da is an especial truth-seeker) and his bai enough in all conscience has been use five years' cropping as stated above. deep ploughing? or was it due to thin sowing? or to all these united? Th questions suggested, only to be answer result of future experiments in the season on this important theory.

"A prophet has no honour in his o try." The party dined at the market Croydon, on Saturday, when Mr. Davi tice was discussed: the farmers then, exception, said they had never availe selves of the offer of Mr. Davis (alth vited) to walk over his farms. They knew anything of his practice, of his c asserted that thin sowing would not a their country.

It is hoped that this statement may general and careful trial in our own di see whether or not, a system so nation personally important will not answe neighbourhood.

Mr. Davis is not merely a speculativ but a sound practical farmer, one wh vours to elicit truth, whether it be three bushels or three pecks for seed: who courts a searching and minute enq his system, to the success of which on farms, as well as to his urbanity and l the parties who visited him beg to y public tribute.

This mode of farming has been suc practised by Mr. Davis for the last elev His own pamphlet on this subject (p shilling) is earnestly recommended to culturists.

nous Plants.—A correspondent in
orary journal states, that he has
Vestmoreland two sheep very sud-
oisoned in a field where such an
ice was never known before. On
ng the field minutely, no poisonous
n be found except Arum macula-
which there is a patch under a wall,
green and tempting, while the field
letely burnt up and destitute of
It was near this that the sheep
ng dead. He adds, that a gardener
hbouring gentleman stated, on the
being named to him, that they had
cows and sheep at different times,
believed from the same cause. We
wonder at it, for this Arum is an
oisonous plant, and will have its
nuch concentrated in such a season

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ULTURAL IMPROVEMENTS.

eference to my Improvements at
Hall (the expenditure of £6000
of 130 acres, that only cost £3250
ined in my two former letters,) I
nstantly told in tones varying from
d pity to ridicule and censure, that
r can pay"—"You will never see
ney again"—You are a bold man"
impossible that it can answer, the
o great," and so on—that I must
r to fill up the outline of my plan
tails, and try to convince those
mprehension of my success is im-
prejudices, the natural result of
ablished usages, whose continuity
lmost preclude a question as to
priety.

of my operations are approved of
ly, but there is a dread of the sum
if what were individually right
collectively wrong.
l show, then,

low the farm is to pay me, as land-
additional rent of £240 per annum,
increased benefit to the tenant as
d with his former holding.

he intended course of cropping,
, and management of the farm.
will remark on the weak points in
sent state of land and system of

shall submit a few general obser-
on the non-application of capital to
d on the importance of agricultural
ments in an economical, social, and
ints of view.

It is only justice to remark, that I am fortunate in having for my tenant a man of temper, integrity, and intelligence, who, with doubts at first as to the correctness of my views, and with an unexpired lease of five years, assisted zealously, faithfully, and at no small personal trouble, in carrying out to the letter my various undertakings.

In making the following estimates, I have adhered strictly to matters of fact, which I am prepared to discuss and substantiate. I have expressly undervalued the benefits, because I know how suspiciously and sceptically my statement will be scrutinized by those whose minds are pre-occupied by doubts and prejudices, rather than by calculation.

STATEMENT OF GAIN OR SAVING.

	£.	s.	d.
200 Trees removed—estimated to damage by their roots and by their shade, 1s. each	10	0	0
950 Linear rods (5½ yards each) of removed banks and fences (ditches filled up,) averaging two yards wide—some were four yards wide, but the difference is set off against a few new ditches. It is estimated that each rod of these fences and banks damaged 6d. by their roots, their shade, their encouragement of weeds and vermin	21	5	0
1-6th saved in horse labour and wear. (This, in the Prize Essay of the Royal Agricultural Society's Journal, vol. iv., part 2. p. 336, is estimated at 1-4th.)	21	0	0
1-8th ditto in manual labour................	20	0	0
Seven acres gained in fences, banks, ditches, bog, and waste, which produced nothing, but cost the tenant rent, rates, tithes, &c., 36s. per acre	12	12	0
Profit in cultivation of the above seven acres, at 15s. per acre	5	5	0
105 Quarters of wheat, thrashed by machine, gain in quantity 1-28th, or 2s. per quarter..	10	10	0
150 Ditto spring corn, at 1s	7	10	0
Saving in thatching, removing stacks and straw, waste by birds, &c.	5	0	0
Liquid manure tank, calculated to contain 120,000 gallons, but we only reckon upon 20,000 gallons, at 50s. per thousand (each 1000 gallons being equal to 4 cwt. guano)	50	0	0
Improved quality of solid manure..........	10	0	0
Increased value of stock, by warmth, dryness, and diminished consumption of food......	15	0	0
General increase on 90 acres of corn and clover crops, arising from *perfect* drainage, at £1 per acre..........	90	0	0
Saving in quantity of seed sown............	20	0	0
Twenty acres that used to be long fallowed, at an expense of £5 per acre now calculated to pay their expenses, if not a profit, by bean or root crops....................	100	0	0
A first-rate house to live in, with every comfort and convenience—the lower rooms eleven feet high, the bed rooms ten feet high, and convenient rooms for the bailiff. (The tenant could not reside in the old dilapidated hovel, which was damp, unhealthy, and caused several deaths by fever)	30	0	0
	£428	2	0

To sum up, whereas the former gross annual return of the farm was under £5 per acre, we shall try to increase it to £10 per acre.

To this might be added several contingent advantages, of considerable value, but not so easily reduced to figures.

1st. The being able to fat at least 100 to 150 sheep more than before, of a better quality, and earlier lambs. The tenant could breed, but never thoroughly fatten a lamb or sheep on the Farm in its former cold, wet, and exposed state, with its homestead open to the cutting north-east winds, without gutters or drainage.

2d. The facility of cooking and steaming food, and the economy of several acres that were required for horse food, by growing lucerne, tares, &c.

3d. The very important benefit of early sowing and harvesting. We reckon we shall gain at least a fortnight in both, as proved last year, with superiority of sample, and avoidance of a catchy week in September.

4th. A perfect independence (by our efficient drainage) of a very wet season, which has often ruined the crops on this farm; witness 1842, when the oats yielded but three quarters two bushels per acre, and an inferior sample.

Lastly, the agreeable feeling of having a complete farm, with good roads, comfortable homestead, and good crops, instead of the former dilapidated, beggarly, and poverty-struck land and premises.

The saving of horse and manual labour is considerably underrated, when you consider the ready communication with each part of the farm, the abolition of all short lands, the facility of ploughing or carting at almost any time with less power, the land being firm and mellow, instead of putty-and-paste-like;—no idle days in wet or cold weather there being employment under cover for men and horses, grinding, chaff-cutting, or thrashing;—the facility, at harvest, of drawing the loaded carts into the bays of our large barn, and at once depositing the sheaves;—the ease with which they are transferred from both barn and stacks to the threshing machine, the straw being delivered by the machine into a gallery over the very sheds, yards, and stables, where it is required;—no time lost or accidents in leading horses or cattle to water, there being tanks in every yard, and *a yard* to every stable—all the tanks filled *simultaneously from* a single pump.

There is another advantage of which no valuation is taken, I mean the farmer or bailiff's time; whilst writing up his accounts or arranging his plans, by stepping from one room to the other, he can at once see every man, boy, horse, or sheep, on *any* part of the farm, except about four acres. Any accident, mistake, neglect, maltreatment, or pilfering, is perceptible at a glance.

THE COURSE OF CROPPING

Will be regulated by markets and circumstances. It may be stated generally, that on the heavy land wheat will alternate with beans and a little clover and tares; and on the light land barley succeeded by rye for feed, and then roots, so as to have one corn crop, one green crop, and one root crop in two years. Should flax or Indian corn be found profitable, we may grow them. It is intended to adopt Mr. Hewitt Davis's excellent practice (which is Jethro Tull's revived) of a small quantity of seed with wide intervals. For carrying out this, no instrument appears so well suited as Newberry's Dibbling Machine, which will deposit three pecks per acre of wheat (and other corn in proportion) at intervals of six inches in the row, and the rows twelve inches from each other (beans, peas, and roots we mean to place twenty-seven inches between the rows.) By affording a sufficient space for frequent hoeing and cleaning, this will do away with long fallows, secure heavier crops (on drained land) and avoid that competition for support which produces, in luxuriant showery seasons like the last, ruinously laid crops, and lean miserable kernels, which diminish the value of the sample by ten pounds in every hundred.

We have found Crosskill's clod-crusher roller of extraordinary benefit in pulverizing our stiff land (disordered by drainage and carting) and shall use Hill's pulverizing plough with Mason's knives; in fact, take every opportunity, by means of subsoiling, scarifying, &c., to obtain a fine and deep tilth free from weeds; nor shall we debar ourselves from purchasing guano or artificial manures, should such a course appear occasionally desirable. Our great object will be to grow the very utmost that the land can produce by forcing; bearing in mind that in doing so, we virtually decrease the expense of rent, labour, seed, tithes, rates, and other charges, thereby increasing our profit and improving the land for the future. We are now using one bushel of bone-dust, dissolved in forty pounds of pure sulphuric cid, to all our root crops, in addition to ther manure.

THE STOCK

Vill consist of twelve head of cattle fed in talls or boxes (on the principle so ably tated and practised by Mr. John Warnes, un.,) with steamed or cooked linseed, lover, chaff, pulse, potatoes, &c. These attle will be considered our manufacturers f manure, as the Lincolnshire farmers call hem, and if they occasionally pay for their eed or a profit, so much the better. As e shall grow annually thirty to forty acres f roots, we hope to be able hereafter to roduce food enough for 200 to 300 sheep, be folded on the land or fed in the yard, ccording to weather and circumstances, aving an especial regard to the well-estabshed fact (as proved by Professors Playair, Liebig, and others,) that with warmth nd dryness, a little food fattens quicker han a great deal with cold and wet. Comare the sleek, plump, though naked, African, thriving on light vegetable food, with the fur-clothed Esquimaux, of the Northern Hemisphere, trying to maintain his supply of carbon by swallowing daily some eight or ten pounds of seal's blubber or other animal food. All our straw will be cut into fine chaff, like saw-dust, for litter. There appear many advantages in this, such as the diminished space it occupies, the readiness with which it absorbs liquid manure, its more sudden fermentation, its avoidance of frequent turning, its portability, both as chaff and manure, and above all, the facility of commixing it intimately with the soil in preparation for root crops. In the tank we shall probably introduce a layer of earth or gypsum between each layer of manure, particularly in the summer season, so as to secure the ammonia.

The liquid manure will be applied by a water-cart to the growing crops (the ammonia being first fixed by sulphuric acid) nd as the green crops are mowed for onsumption in the yard, the liquid manure ill follow the scythe. We have also used uch common salt, especially on the light nd.

HE WEAK POINTS OF THE PRESENT SYSTEM.

I believe I am quite correct in stating, at in our heavy land districts only fifty res out of every hundred are available to oduce food for man or profit to the farmer. ll twenty acres are consumed by the m horses, twenty-five acres in long falrs grow nothing, but *involving an outlay* of nearly £5 for each acre, and from five to ten acres occupied by banks, ditches, and farm buildings, leaving the tenant the produce of from forty-five to fifty acres to pay all charges on 100 acres.

I think it is high time such a system should be altered, that by perfect drainage, economy of manure, and superior cultivation, twelve acres should keep the horses, and *all the rest* (save the homestead and an external iron or wood boundary fence) be available for corn or roots. That this is perfectly practicable is proved in Lincolnshire, parts of Scotland, and other highly cultivated districts. It is an easy and profitable way of adding forty per cent. to our territory without the cost, cruelty, and trouble of conquest, military protection, or migration, with the more pleasing reflection of not having to rend asunder those kindly ties of home, affection, and friendship, the want of which is bitterness in the cup of many an honest emigrant.

With regard to fences, there appears a sort of veneration for them entirely unaccountable. I object to them *in toto,* except such as are of wood or iron. The banks on which they stand are privileged receptacles for every description of noxious weed, insect, bird, and vermin. Unhoed, unploughed, unharrowed, they furnish an annual crop of seed weeds, carried by winds and by birds on the land, that defies the farmer's attempts to clean it: that renders long fallowing necessary, and involves a perpetual expense in hoeing, and loss by superseding so much of the regular crops. In fact, in a variety of ways they involve a loss far beyond the annual interest, for the repair of wood or iron fences, or charge for their gradual deterioration. I object even to well-regulated thorn fences, on the score of exhaustion by their roots, the expense of clipping, and the impossibility of disturbing the ground on which they stand. But my dislike amounts to positive indignation at seeing the generality of fences occupying one-tenth of the land that should grow our food, and employ our labour and our capital, spoiling another tenth by their supply of weeds and vermin; their interruption of air and light—to say nothing of the facilities they afford for fraud and neglect of duty, and the difficulties they interpose to a ready supervision by the farmer or his bailiff. If shelter is needed at particular seasons, it can readily be afforded by other means.

In cold and elevated districts, well-regulated plantation-belts are essential, but cannot be required in our midland and southern counties, where there *should be* well-arranged homesteads, through which no north or east wind should be permitted to breathe—much less blow.

Another gross oversight is in the placement of buildings. How often is profit unwittingly sacrificed to minor considerations! To gain the view of a road, or because the premises would show better, we starve our cattle with a north or east aspect, shutting out the sunny warmth, and to increase the intensity of cold, erect *detached* buildings to cause a stronger current of air (something like St. Paul's Churchyard on a windy day.) Gutters to the buildings or drainage to the yard itself are seldom thought of, it being a *sine quá non* that a farm-yard should be both cold and wet.

There are many other matters that strike me as requiring amendment. Time is money (at least it is paid for in money,) therefore light spring carts and improved implements with active but strong horses, will necessarily make quick smart men; but this cannot be till we drain our lands, knock down our fences, and substitute dry firm land for knee-deep, fence-arched, green, and muddy lanes. If, as a matter of calculation, there are forty points in agriculture (and there are more) a saving of one-half per cent. in each will clearly make a difference of twenty per cent.

I have been found fault with for removing the trees, "spoiling the landscape and beauties of the country," as if farming were not a *business*, and carried on for *profit* rather than appearance: one might almost as properly suggest to the manufacturer costly and spacious ornaments to take the place of his spindles and machinery. Besides, perfect drainage of house, buildings, or land, is impossible where you have trees and fences, their roots will travel many yards in search of moisture, will seize on and occupy a drain (as a vine-root would on a bone,) and effectually choke it. I know an instance where the root of a pear-tree followed the retreating water of a well *forty feet*.

I have been censured for erecting so spacious a barn, and for building it with bricks on the plea of its endangering the sample in a damp season. This objection is untenable, the roof having gutters, and the ground on which it stands being perfectly drained *inside and out*, a matter of *great importance* as water rises by capillary *attraction. We have also* about four dozen of iron air-bricks as ventilators, and take care not to fill it entirely, but leave a space for ventilation between the corn and the roof. Last season, with its contents of twenty-five acres, the sample was excellent, and having just hastily filled it before that heavy rain which wetted most of the stacks through, and deteriorated the samples five shillings a quarter, it saved us at least £20.

Threshing machines are valued principally for their facility of conversion, and the quantity they perform. To me their more perfect extraction of the grain, and prevention of fraud or neglect, are far more important considerations. A single grain of wheat in fifty is two pounds in every hundred, or five shillings per acre, and an examination of straw whenever we have the opportunity, gives us fearful evidence of what is lost by imperfect threshing and shaking.

I frequently see with pain the farmer engaged in laborious pursuits (the work of his labourers,) when his time should be much more profitably employed in keeping correct and daily accounts of all his monetary and other transactions, so that, by a reference to each particular department, he could at once detect generally, or in detail, the weak points that require amending.

I am not one of those who think a farmer more likely to succeed for dressing or acting like one of his common labourers—it is the mind and calculation makes the man.

AS TO THE NON-APPLICATION OF CAPITAL TO LAND IMPROVEMENTS.

It seems singular that in this age of superabundant capital and superfluous unemployed labour, there should never have been a concentration of wealth for the purpose of improvement in agriculture. We have had companies with unlimited capital for the wildest and most unprofitable schemes, as well as the most trivial. We lend without compunction our hundreds of millions to employ the labor and strengthen the hands of foreign nations, who are now our competitors in agriculture, commerce, and manufactures, and who may be to-morrow our greatest enemies in warfare.

It seems like a national disgrace, that whilst we have had companies for almost everything, from a railway to a steam-washing and milk company, we have had no "Improvement of our Native Land Company." And yet there is nothing so grateful as the soil—so safe—so permanent—so large in pecuniary amount—so honorable and pleasant in pursuit.

There may appear difficulties in the way—but in what undertakings are there not? Under a well-arranged Act of Parliament, thousands of landlords whose mortgaged estates are now almost an incumbrance to them, would readily avail of an opportunity that would render their at present sterile ands valuable properties, increase the capital employed on them, improve the condition and diminish the competition of our farmers, reduce pauperism and disconent by furnishing employment to the willing labourer without emigration, and keep in our own country and for our own benefit that large sum annually paid for foreign corn. If there had been such a company, I, for one, would have invested my spare capital in it; but there not being one, I have carried out individually, at no small personal trouble and thought, those improvements which I hope to see some day effected, as a matter of course, by a well-regulated charter of associated capitalists, who will derive not only a good pecuniary benefit, but the more enviable gratification of having conferred a valuable boon on their fellow-countrymen.

I am preparing drawings and ground plans of my buildings and machinery, which, with copies of my letters, I shall be happy to give to any gentlemen interested in agriculture. The plans and designs are my own. The general application of the expenditure is as follows, viz.

Draining, fencing, levelling, ditching, and roads	£2200	0	0
Barn, stabling, tanks, sheds, yards, &c.	2000	0	0
House and offices	1000	0	0
Machinery, Implements, Steam Apparatus	500	0	0
Manure, marl. &c	500	0	0
	£6200	0	0

The item for house has been objected to, but I have yet to learn that a farmer is not entitled to be as well housed as a tradesman or manufacturer, and I am convinced brick and slate buildings are ultimately much cheaper than board and thatch.

I would caution gentlemen who may visit my farm this year, against raising their expectations too high, for although the land is all cropped and doing well considering the dry season, I would have them remember that last year it was considered the poorest farm in Essex; that since January 1843, we have cut 80 miles of drains, and spread their contents (nasty yellow stiff loam) on the surface; that we ave removed 5000 yards of banks and ences, filled up the ditches, cut new ditches on the heavy land there should be one every seven or eight acres,) made new roads, cut down and converted between 200 and 300 trees, carted across the land 60,000 bushels of stones, 300,000 drain-pipes, 400,000 bricks, 200 loads of timber, slates, iron, stone, sand, lime, and building materials; that we have removed all the old buildings, and erected new ones on a different site; that every thing has been out of order and out of time, and that all this was done in sixteen months, *without long fallowing a single field.—I. J. Mechi, 4, Leadenhall Street, London, June* 11, 1844.

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WASTE LANDS IN SURREY.

Several of our correspondents having made enquiries as to these wastes, we take the following account of the *Heaths of Surrey* from an agricultural survey of that county, published several years ago. We have little doubt the writer's description of these heaths will answer very well for them at the present day:—

"The greatest part of the heaths of Surrey lies in the west and south-west districts of the county, extending from Haslemere to Farnham, and from Farnham by Bagshot to Egham. In this wide extent there are very few spots of cultivated ground. There is also a considerable tract of heath land on the broad and flat part of the Surrey downs, between Ewel and Epsom on the north, and Riegate and Buckland on the south of the hills.

"The general surface of the heaths in this county is very flat: Hindhead, in the neighbourhood of Haslemere, is perhaps the most elevated of the heath land.

"The first of any considerable extent is situate about four miles south of Guildford, called Blackheath, containing 1000 acres of different coloured sands of various depths, producing nothing but short heath: its situation is high and exposed, and the greatest part so poor, that it is unfit for any thing but plantations of firs, but especially Scotch and larch. There are parts of it in which beech, birch, and chesnut, would grow well.

"Munsted Heath contains 220 acres of light sandy loam, covered with heath and furze, capable of being applied to various agricultural purposes; and its contiguity to Godalming would render it of great value.

"Hydon's Heath contains 450 acres, chiefly sand and gravel: some parts sandy loam. The skirts would produce good corn.

"Wormsley and Hamilton Heaths nearly of a similar soil, and contain 350 acres.

"Hindhead contains 3096 acres, chiefly sandy soil, although many spots are loamy; the whole of which might be most profitably planted.

"Frencham, Thursley, and Whitby, contain 5800 acres of deep sandy soil.

"Farnham and Cooksbury contain 3700 acres of deep sandy soil. The valuable plantations of firs on these heaths demonstrably prove to what a profitable purpose they may be applied.

"Tuxbury Hill contains 600 acres of similar soil.

"Bagshot Heath, including Romping Downs, Purbright, Windlesham, &c., contain upwards of 30,000 acres covered with short heath.

"South-east of Croydon is Addington Heath and Shirley Common, containing 300 acres: the soil a black land and loam, the whole of which, except the summits of the hills, is capable of producing barley, oats, turnips, artificial grasses, &c., and the hills might be profitably planted with firs, &c. It is at present covered with short heath and furze, and cannot be said to be worth more than 1s. 6d. per acre; but if enclosed, would find a rent of from 15s. to 20s. an acre.

"On the high turnpike road to Grinsted in Sussex, and a little beyond the twenty-fourth mile-stone, is Blendley Heath, containing fifty acres of sour pasture; the soil is a deep stapled yellow clay.

"Pacon Heath nearly adjoining, consists of seventy acres of light sandy loam, covered with juniper, furze, and fern.

"Felcot Heath, north-west of Pacon-heath, containing 250 acres covered with heath; the soil a black sandy surface upon loam.

"Frogwood Heath consists of 200 acres of light sandy soil, covered with heath, furze, &c.

"Headly Heath may contain about 900 acres of various soils, such as sand, loam, gravel, and clay, and which is at present covered with furze, heath, and fern; it is, however, well calculated for the growth of corn, turnips, and artificial grasses.

"The whole of these extensive heaths may be fairly considered, in their present condition, as of very insignificant value. A very few poor looking cattle and sheep are seen scattered over some of them, picking up a scanty support with much difficulty and labour. Turf is perhaps the produce they afford in the greatest abundance, and of the most value: in the low swampy parts about Bagshot, Windlesham, Frimley, and Chobham, peat is cut: though as the spots that supply it are few, the time it takes to renew very long, and the demand for it great, it is wearing out fast. Some women in the neighbourhood of Bagshot employ themselves in cutting long heath where it can be got, for *besoms, by which* they make about 3s. a week. Others are employed in gathering the blayberry or whortleberry for sale. Such are the miserable productions and the trifling employment which these heaths in general afford.

"In some of the western heaths, however, a more profitable mode of occupation has been long followed—one which ought to be withdrawn from more fertile soils, and confined to the wastes. Fish ponds are common in the western heaths, and certainly pay better than any other mode of employing the land; but as their extent must necessarily be confined, there is still room for plantations: and probably, if the hollows were made into fish-ponds, and the other parts of the heaths planted with the Scotch fir, or larch, they would yield as much profit as could well be expected from them."

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TIVERTON FARMERS' CLUB.

At the late annual meeting of this Society, which was presided over by Lord Palmerston, his Lordship made the following remarks in illustration of the advantages derivable from Agricultural meetings:—"Each man's experience must inevitably be confined to a small scale—to the range of his own farm, or to the range of his immediate neighbours'; but by these meetings he his able to acquire all the benefits of the experience of a large portion of country. Agriculture has of late years taken an entirely new character. Up to a very recent period agriculture was a practice; it is now daily becoming more and more a science. In former times men did in agriculture, as they have been wont at different periods to do in many other departments of knowledge; they groped about very much in the dark. They saw that certain things produced certain results, but they did not know why those causes produced those results. They knew that certain manures were good for certain soils, that certain soils were best adapted to the cultivation of certain produce, that some pastures fattened better than others, but why those different results rose from those different causes, not only the farmer could not tell you, but no man had turned his attention to investigate it. Chemists have of late years turned their attention to Agriculture, and that science which had formerly been considered to be confined in its practical application to medicine, has during the last few years been turned to the practical advantage of Agriculture, and the agriculturist is in fact a manufacturer. He is a manufacturer of grain, and grass, and cattle. He knows by experience that certain manures are favourable to the growth of certain crops. But the chemist has stepped in of late years, and by careful analysis has told the farmer first of all what are

mical elements of which his crops are
d; has instructed him what are the
es of which the straw, and the grain,
grass, and various other vegetable pro-
, are composed. Well then, the chemist
your soil. He tells you what the soil
sed of. By knowing what the soil is
d of, on the one hand, and what the
want to grow is, on the other, you can
her your soil contains all the elements
r for the crop, or whether any, and if
at are the ingredients to be added.
is reduces Agriculture, which before
tter of experiment and trial, to a science
rly amounting to certainty; because
n can tell, within a certain calculation,
his soil is adapted to the particular
o which he wishes to apply it, and if it
knows what manures are necessary in
render it fit for his purpose. The che-
teaches the farmer that those chemical
es which are found in his farm-yard, if
stored, if carefully collected, and not
o run to waste, as has been too much
ice all over the country, are among the
able applications which he can add to
and that, in fact, the farm-yard of
mer contains more valuable manure
an obtain by a large expenditure of
n purchasing elementary substances
ad; everybody knew by their expe-
t marshes containing stagnant water
vouable to vegetation. The chemist
all these various workings of nature;
you know what nature does, and how
it, you are better able to enlist her
rocesses into your service than when
lered in the dark, without any other
n that of trial and observation. These
advantages, which science has of late
ught to assist the practical farmer, as
descriptions of knowledge which the
n and pursuits of the farmer prevent
acquiring."--*Woolmer's Exeter Gazette.*

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INGTON FARMERS' CLUB.

onthly meeting of this club on the
une, the subject for discussion was the
thod of Fallowing the strong clay lands
strict, and whether it is desirable to
pan or old sole of such lands in fallow-
r. Walton, the vice-chairman, on in-
; the subject, read to the meeting a
resting paper, written and presented at
by Mr. George Davidson, of Darling-
a very spirited discussion followed.
lose of the discussion it was unani-
resolved:—"That it is better not to
pan or sole to any great extent, either
by subsoiling or otherwise, unless the land be first effectually thorough-drained, in order to carry off the water; but at the same time deep ploughing, on the majority of strong clays, is considered highly advantageous, and is strongly recommended; bearing in mind always, that the first ploughing should be given in the autumn, or the beginning of winter, so that such parts of the pan or subsoil as may be turned up by that ploughing may be exposed to the frost; the land also to be thoroughly water-furrowed and gripped, and afterwards well cleaned and cultivated during the succeeding summer's fallowing."

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PENWITH ACRICULTURAL SOCIETY.

The annual exhibition of stock and implements for premiums offered by this society was held at Penzance, and was a great improvement on the show of last year. A party of about 80 gentlemen sat down to an excellent dinner at Ball's Hotel, under the presidency of Colonel Scobell; Humphry Pascoe, Esq., the honorary secretary, officiating as vice-president.

Subsoil Ploughing.—Col. Scobell mentioned some circumstances respecting the mode of ploughing in that district. It had struck him they were in great error in ploughing so shallow as they generally did. Taking the average of the country, he thought they did not plough deeper than from three to three and a half inches. That was a small quantity of earth to be turning over eternally, to produce crops from. He was fully aware there was a great horror of deep ploughing here: and he could easily account for it. Many years ago, an ancestor of the Praeds—he believed the great grandfather of the present owner of Trevethoe—had a very deep plough, and ploughed 18 inches or two feet deep. He turned up a large quantity of land, and, in fact, ruined the country. Since that, they had a number of Scotch gentlemen, and North country gentlemen, who had come into this country, and ploughed outrageously deep. Now, that over deep ploughing he considered to be as great an error as too shallow ploughing. The great disadvantage of shallow ploughing was, that no air would circulate, and no water would drain off; and water, if kept on the surface, would create acidity, which was very prejudicial to vegetation. It was a well known fact that the samples of corn in Cornwall did not come up to the samples in other parts of England; and he ascribed this, in a great measure to their not having a sufficient depth of soil. He, therefore, strongly recommended every gentleman to try subsoil ploughing. He had found it most valuable in many instances. In a farm of his in Buryan, it had almost worked miracles. It was a very foul estate, and by subsoil ploughing, and rooting out the under weeds, his land and crops had been improved to a surprising degree. On the farm at Bortrea he subsoiled a portion of the land, leaving a strip in the middle not subsoiled. In the part subsoiled he had a good crop of oats, while on the portion not subsoiled he had not a single grain. But afterwards when he came to look to his arishes, he found that the part not subsoiled had better grass than the part that was subsoiled. That, however, he attributed in some measure to another cause. They had a very rainy season when they put in their seeds; and he believed the rain-water sank down so quickly that it formed a cake, and the seeds did not come up so well, in consequence.

Steaming Turnips.—The Chairman said, the next question was, as to the mode of using their turnip crops to advantage. As he was the introducer of turnips into that country many years ago, and had followed his present system for 20 years, he might venture to recommend his mode of using them. He had tried it for many years, and the more he tried it, the more he was satisfied with it; and he saw, too, that to a certain extent he was followed by many gentlemen. All farmers and horse-keepers, allowed that steamed turnips were most excellent food for horses. Finding that it was good for horses, he had tried it to a great extent for other animals; and for the last three years he had fed with steamed turnips 100 head of cattle, about 17 or 18 colts, all his stock of horses, which was about 16 or 17 more, and generally about 120 head of pigs. All this he had done with steamed turnips. He assured the company that the trouble of doing this was very little; he did not employ one more person in steaming turnips for his cattle than he did in giving them raw. The expense of fuel for the whole was 8 cwt. of coal per week. He found all the young animals —calves, pigs, and every thing—do exceedingly well on this food. He did not fatten his pigs on steamed turnips, but still kept them up in good store condition. He would recommend all farmers to steam all their turnips for their cattle. The drainage from his steam-turnip vats—that was, the condensed liquid, after the process of steaming—kept all his store pigs. The winter before last, he kept 80 head of pigs on the liquid that came from the turnips. But he did not recommend the steaming turnips over-much. There was an acidity in the rind which physicked and purged the animal; and he thought that the merely extracting this, and softening the outside, was much better than over-steaming and reducing the turnips to a pulp, because then they extracted too much. The great advantage of steamed turnips was, that they could be given to any extent in weather; and they would have the same ef as oil-cake, or hay and corn. He did not th so many years would elapse before the farm would follow him in steaming turnips, as passed before they followed his example drilling turnips. He thought in a short ti it would become very general. But he wo advise gentlemen, whenever they had a ste ing-machine, not to have it too small. larger the boiler, the less coal in propor required.—Mr. S. James was the first to fol Colonel Scobell in adopting the plan; and fi that time, about four and five years ago, to present, he had continued to use steamed tur for his horses, pigs, &c. As to the conde water, he was satisfied there was nothin good for feeding pigs. Since he had gi steamed turnips to his horses, he had never the misfortune to lose a horse, and had scar one unwell. Formerly he used to have ho unwell, and was told it was from over-w but now they did quite as much work as be and he had scarcely one unwell. He gave t very few oats.—The Chairman.—Mr. Jan horses do a great deal of work in carryin the roads; but I am satisfied that farm h will do their work on steamed turnips chaff.

CULTIVATION OF WASTE LAND.

The Chairman said, the improveme agriculture had been his chief occupatio the last 40 years; and during that tim average expenditure in manual labour had about £500 a year. At present it was n more. He had brought in a considerable q tity of land; if he were to say, 500 acre believed he should be within the mark. was continuing to bring in land, and he fou answer. *He found the land in this county grateful.* The very worst land would pro good oats, fair barley, good crops of pot and turnips, and they were sure of a cr grass. Those articles were good groun proceed on; and he had no reason to repe the money he had laid out. It had given health, exercise and amusement. The imp ment of land would answer particularly practical men living on their estates. Whe began to improve land, he had not the ad tages which are now possessed by the farm artificial manures; and it was the opinio many that it was impossible he could manures. But by the adoption of certain pl he succeeded; and until this last seven or years, he manured all his land with the ma made on his own estate, without the aid of ficial manures. Though artificial wer excellent assistance, he advised all to take of their farm-yard manure. He contended no farmer ought to buy manure. He was convinced that if they adopted the system of house feeding in the winter, and of soiling in the summer, they might raise what quantity of manure they pleased. His great object, in improving land, was to raise manure; because without it, he could do nothing; with it, he could do everything.—*Abridged from the Cornwall Gazette.*

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NORTH WALSHAM FARMER'S CLUB.

At the annual meeting of this Society, lately held, Mr. Gower, the secretary, read the report for 1844, from which we make the following extracts:—"On the cultivation and manufacture of Flax, it was stated that from an acre of land, which produced four coombs of seed, 53st. 8 lbs. of fibre had been scutched, and 7s. 6d. a stone had been offered for it. It was considered that had this flax been pulled earlier, it would have been worth more per stone than it then was, would have produced more weight per acre, exhausted the land much less, and would have been off the land in time to sow turnips for sheep-feeding."...."In detailing the method which had produced the greatest weight of Swedes per acre recorded by the club, the most striking peculiarity in the management of the crop was hand-weeding, or thinning the plants previous to their being hoed: when thus separated the plants take stronger hold of the ground; the best plants are easier selected by the hoers when cut across the drills. This crop having been grown on ridges at 27 in. distance, led to remarks on ridging and drilling on flat work; the latter system was supported only by few. It is evident, since this question was first discussed at the club, there are many converts to the ridge system."—*Abridged from the Norfolk Chronicle.*

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PROBUS FARMERS' CLUB.

At a recent meeting of this club, an interesting lecture on the best method of "economizing the manure on a farm-yard" was introduced by one of its members. This is a subject which has been frequently brought before the club, and although it is admitted by all, that a great deal of mismanagement exist in this department of a farm, yet as the admission of a truth is far enough from ensuring its practice, so in this case, we are sorry to say that improvement in this necessary and useful branch of rural economy is but slowly progressing in the county. There should *be, properly* speaking, a tank or brick reservoir built in every farm-yard, for the reception of the drainings from the cattle houses and stable. The greatest attention is also requisite in the mixing of the various sorts of manures, using in every instance some chemical substance, such as gypsum, which fixes the volatile parts of the dung, by forming a sulphate of ammonia, a fixed substance, and is thereby preserved. The requisite quantity of gypsum amounts to one-seventh of the whole excrements, and the price is exceedingly low, being about 40s. per ton. When, from circumstances, liquid manure tanks cannot be obtained—and we contend that *they should be built on every farm-yard, at the expense of the landowner*, let the dung be preserved in a heap, in as small a compass as possible (not scattered over the whole yard and lane adjoining,) and every layer of litter should be sprinkled with gypsum—(in dry weather, water is also required.) At one corner of the heap make a hole, into which a cask should be inserted, and gutters conducted to it from different sides of the heap, so that all that flows therefrom may run into the cask, which may be thrown back again upon the heap if not wanted for other purposes on the farm. Manure heaps of this kind may be exposed to the influence of any weather without injury. The lecturer here alluded to the practice of Col. Scobell, near Penzance, which differed from this by using earth to absorb the draining from the dung-heap and cattle-houses, and which when completely saturated, was turned up in a cone, so as to exclude the air, and prevent exhalation. Generally speaking, the Cornish farmer is not fond of throwing away his money, and yet he does so every day for the want of proper management in the preserving of his manures. He does not grudge a large sum of money in the purchasing of guano and bones, without considering that the urine and solid excrements of animals contain all the essential ingredients which are to be found in both of these valuable manures. According to Boussingault, the solid excrements of man amount on an average to 1½lb. daily, 5-4lb. of urine and ¼lb. of fæces, and both taken together will amount to 547lbs. in one year, which contain 16-41lbs. of nitrogen, a quantity sufficient to yield the nitrogen of 800lb. of wheat, rye, oats, or of 900lbs. of barley. The lecturer reprobated, in the strongest terms, a system we are sorry to see frequently adopted in the county of Cornwall, that of allowing the liquid manure to run down to the margin of some brook or pond, where the water carries away all the soluble parts of it,—and where this is not the case, the farm-yard manure is frequently scattered about the yard, and the urine from the cattle house, instead of running into it, is allowed to run away by a drain into a neighbouring meadow—producing in one single spot a rank herbage that is very likely to produce a fit of indigestion on the animals that consume it. Another practice, which he properly condemned, was that of carrying the straw into the lanes; and when after a great part of its fertilizing properties are either washed away by the rain or absorbed by the winds and the sun, it is carted back to the fields for manure. How perfectly absurd! We are apt to look with disdain on the Chinese, because, forsooth, they do not excel in the art of depopulating kingdoms and bombarding cities by the improvements of modern warfare; but however we may excel them in *destroying life*, it is very certain that with all our claims to superior scientific attainments, in the art of *supporting life*, by the judicious cultivation of the soil, and by making the most of available means, are very far behind them; for by the laws of that country, the inhabitants are not allowed to let manure to run to waste, but reservoirs are placed in every house, where they are carefully preserved, and no other kind of manure is used for the corn fields. A long and interesting discussion ensued at the termination of the lecture.

The Duke of Newcastle, through
ward, has allotted 26 acres of land,
liberty of Coptorn Buller, to the co

THE ALPACA OF PERU.—We o
in a late number of the *Berwick*
that there was some expectation o
ducing the Alpaca into this count
large scale for the purpose of wool-
ing; but an objection was raised l
besides other adverse circumstan
climate of Great Britain and Irel
unsuitable. We beg to disabuse th
mind on this subject, as there ca
doubt as to the climate being suita
difficulty not being in the climate-
the meantime to get these animals i
into this country in a healthy state.
continue very healthy, we are in
until they reach the Cape of Goo
but after being a very little longe
(either from being so long at sea
defect in physical strength to endur
sea voyage) they droop and die—at
the extent of two-thirds. Some
might be adopted whereby they
put on shore for a time at the Ca
re-embarked into a succeeding vess
be this managed as it may, we hav
male and female of the Alpaca sp
Craigbarnet, Lennoxtown, Stirli
which have been there for the la
months, and they have stood the
winter without injury, and we are
are more hardy than our native
they require *less* food, and could exi
sheep would die. There seems h
be any kind of food they will not ea
eat turnips, hay, oats, and beans—
more partial to meadow than rye-gr
These animals are now in the highe
and in the most perfect health—t
jet black, and follow their keeper
dog, and are very elegant and inte
The weight of the fleeces of last y
17½lbs. Their worthy owner is of
and to use his own words, "he ant
when the navigation between us an
America is diminished as to *length*
which steam will most assuredly acc
thousands of Alpaca will be brough
our hills will be covered with th
they will become a scource of great
to the proprietors and farmers of t
land districts, for these animals wi
upon that kind *of coarse bent*, which
horse nor cow, nor sheep will lo
touch." If this obtains a coruer,
again return to this interesting sub
more particularly if there are you
—*Berwick Warder*.

Substitute for Guano and Bones.—Two facts were obvious to me long ago: viz., that bones owe their powers, more especially with reference to turnips, to their earthy constituent, the phosphate of lime; and that many years could not elapse ere the light soils of England must once more go out of cultivation, without some succedaneum could be found. The same opinion applies to guano, for no person can anticipate any long-continued supply. It is satisfactory, therefore, to know the subject, for the one is almost identical with, and therefore at least equal to, the other. And it is still more so to know that an inexhaustible supply is at hand, the collecting of which will do more with reference to the sanatory regulations of all large cities, than any other precaution whatever. Twenty years ago I published, under the signature of "De Winterton," in the *Hull Rockingham*, and again, since reprinted in my own name, in the columns of *Bell's Weekly Messenger*, the means of securing such substitute, by collecting human urine, giving to it about fourteen pounds of sulphate of magnesia (Epsom salts) to every hundred gallons, and adding lime in the state of hydrate (that is, slaked.) Such a mixture contains all the elements of bones and guano: and although more than one private empiric and public company have adopted the process, for profit, it still remains comparatively unknown. I calculate more than one hundred gallons per month are thrown away in every minor farm-house, while in towns there is great waste in this way.—*W. M. Dinsdale.*

Feat in Ploughing.—On Monday, June 10, John Bradley, ploughman to his father, Mr. Thomas Bradley, farmer in Cabus, near Garstang, Lancashire, on one of the Duke of Hamilton's estates, ridged, or as it is called, drilled or stitched a three (customary) acre field for turnips in the short space of five hours and fifteen minutes with a pair of horses and a single mould-board plough. The drilling was of the first order of ploughmanship, and considered by experienced judges not to be surpassed, although done in so short a time. He commenced the work at seven o'clock in the morning, and completed the same at fifteen minutes past twelve—neither himself nor the horses appearing at all fatigued, notwithstanding having raised no less than 136 drills twelve inches high, and two feet four inches from centre to centre, and as correctly as if they had been done by a line and rule. The ground was rather slippery, being a clayey bottom. In fact, only a few years ago the same field produced little or nothing but rushes; but by Mr. Bradley having it properly drained, it is now coming into a proper state of cultivation.

Poaching Extraordinary.—We have often heard of the ravages committed by the hooded crow on the eggs of game during the breeding season, but we were scarcely prepared for such a proof of wholesale destruction as the following fact discloses. A few days ago, Mr. Purves, tenant of Linton Burnfoot, ascertaining that there was a hooeed crow's nest in a certain tree on his farm, proceeded to the spot with his gun, with the intention of destroying the brood of young, before they took their departure from the parent nest. On arriving at the place, however, Mr. Purves was much disappointed at discovering that the whole brood had flown. Knowing the destructive propensities of this vermin, he had the curiosity to examine the ground around the foot of the tree, and was so astounded at the number of partridge egg-shells which he found strewed about, that lest he should be accused of exaggeration, he took the precaution of requesting two gentlemen, his neighbours, to assist him in counting the shells, when, to their astonishment, they picked up the enormous number of one hundred and ninety-six shells of partridge eggs, within a few yards of the tree! The whole of these eggs were evidently consumed in feeding the young birds; but how many the old lady and gentleman had themselves gobbled up without ever bringing them near the family domicile, it would be difficult to estimate.—Kelso Mail.

Frauds on Farmers.—There is an article vending at this time in Hull, under the name of "*bone ashes perfectly genuine*," and finding a ready sale for the turnip crop, which certainly does not contain so much as *five per cent. of real* bone ash! It appears to consist almost entirely of *crushed limestone!*—*Mark Lane Express.*

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METEOROLOGICAL & RURAL OBSERVATIONS.—WINWICK, June, 1844.

May continued dry until the end, with a cold wind from the N., N.E., and E. On the 5th of June there commenced a series of light refreshing showers, with a change of wind to the south, which have continued at intervals ever since, though not until lately to the extent as to prove any material benefit to the land. Within the last week the face of the country has assumed a more pleasing aspect under the reviving influence of copious showers. Yesterday we had frequent and heavy thunder showers which will prove of infinite advantage to the country.

Hay-making has generally commenced in this neighbourhood. The grass crops are particularly light, not being more than one-sixth of an average crop; but it is expected that the after-grass, or second crops, will prove probably heavy. The grain crops have suffered materially from the effects of the cold dry parching winds we had in May; and oats especially are very much stunted from the want of a proper supply of moisture. Potatoes are looking remarkably well considering the state of the weather, though the early varieties do not prove satisfactory in either size or quantity; but, now that the tubers are better supplied with regard to moisture, we may hope that if not the early at least the later crops will turn up better.

During the past week I took a ramble through the north-west part of Cheshire, through Northwich, &c., unto your ancient city (Chester); from thence by Liverpool, Runcorn, &c., in return. The grass lands all along the road are considerably worse burnt than in this neighbourhood, and all descriptions of crops appear to be suffering more from the effects of the drought, though the corn blades are generally a healthy colour. Beans are remarkably short, not being more than nine or twelve inches high in most places, but are flowering to within a very little of the surface of the ground.

CALENDAR.

June 5. Wheat (triticum hybernum) in ear
10. Blackberry (rubus fruticosus) in bloom
„ Elder (sambucus nigra) in bloom
18. Oats (avena sativa) in ear

June 18. Foxglove (digitalis purpurea) in bloom
„ Sweet-briar (rosa rubiginosa) in bloom
„ Dog rose (rosa canina) in bloom
„ Haymaking commenced

ATMOSPHERICAL OBSERVATIONS, FROM MAY 21st to JUNE 20th, 1844.

WEATHER.	A. M.	P. M.	Even.	Days	N.	N.E	E.	S.E.	S.	S.W	W	N W	Total.	
					PREVAILING WINDS.									
Clear	6	8	9	5	5	10	3	0	1	0	2	2	23	
Fine	15	14	13	13	1	8	9	0	0	4	15	5	42	
Fair, cloudy............	3	2	3	2	0	3	4	1	0	0	0	0	8	
Rain	7	7	6	11	0	0	2	0	8	4	5	1	20	Sun shown out A.M. 26; P.M. 26; days 27.
Total	31	31	31	31	6	21	18	1	9	8	22	8	93	

FORCE OF WINDS.

FORCE.	N.	N.E	E	S.E.	S.	S.W	W.	N.W	Total.
	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.
1 Calm, or gentle breeze	1	1	15	0	1	4	9	2	33
2 Moderate wind	5	15	3	1	7	2	6	6	45
3 Fresh breeze	0	5	0	0	1	2	7	0	15
4 Strong wind	0	0	0	0	0	0	0	0	0
Mean Force	1·8	2·2	1·16	2·0	2·0	1 75	1·9	1 75	1·80

FALL OF RAIN.

	Days.	Depth. in. dec.
From May 21st to 31st ..	0	0·000
„ June 1st to 10th ..	5	0·420
„ „ 11th to 20th ..	6	0·525
Total	11	0·945

ATMOSPHERIC PRESSURE.

	Max.	Min.	Mean.	Max.	Min.
	in.	in.	in.	May26	Jne.6,7
Atmos. pres..	30 44	29 60	30·0858	27,&28	M27,30
Diurnal varia	0·40	0·00	0·0974	J8,17	J2,4 7,14

Utmost range or greatest variation .. 0·84 in.

TEMPERATURE.

	Max.	Min.	Mean.	Max.	Min.
	o	o	o		
Max. or Solar Tem	81·00	55·00	69·25	June 8	June 19
Min. or Lunar do.	55·00	27·00	41·77	„ 6&13	May 28
Mean: Diurnal do.	64·25	48 50	55·613	June 13	June 26&27
Diurnal variation.	43·00	6 00	27·35	„ 1	June 19

Utmost range or greatest variation........54

Winwick, June 25th, 1844.

Edward Rothwell.

Horticulture, &c.

PAGATION OF ROSES BY CUTTINGS.

generally believed by amateurs and others Moss, Provins, French, Damask, and on Roses, &c., are difficult to increase by gs; but by the following method, these nay be raised in abundance. Let a bed l-fermented stable litter and leaves be y the side of a north wall, and place a two-light frame on it so as to face the In this put about eight inches of leaf- that has been previously well soaked ater; then spread over all about three of sharp pit sand, and make the whole d level. The back part of a span-roofed ning east and west, with a wall in the is also a suitable place for the purpose. ld be filled to within a few inches of the ith the same kind of material. In se- the cuttings, tolerably weak wood of the year's growth should be taken, if it is ntly ripened at the base or has made one med leaf. Strip the cuttings with the nd thumb, and smooth the base, reserv- detached portion of the parent bark; cut lose above the first leaf, and insert them and, but not so thick as that their leaves rlap one another. When this is finished should be watered, to settle the soil hem, and they should have plenty of air first four days; but it ought to be lessened ees, so as to gradually inure them to a l atmosphere. As the preservation of aves in a healthy state is essential to , the bed may be formed and the cuttings n the same day, without waiting until erial becomes heated, as a thin covering ular tissue should be formed over the d end of the cutting before that takes In the third week the greater part will ed, and in the fourth they should be ff into 60-sized pots, in a soil composed mould and loam. They should be after- emoved into a damp frame or pit, without ter being given to their roots; but they slightly syringed over their leaves, and ey become well rooted in the new soil, y hardened off and either shifted into ized pots or planted out in a sheltered where they will make fine plants for ar. By again levelling the surface of , and making the cuttings to two eyes—preserving one leaf, Tea-scented China, and Boursault Roses, &c., will root it without any further preparation; but siderable quantity of the first-named sorts are required, either the old beds should be taken down, and a little fresh fermented dung added, or a new one should be made, using the same sort of materials as are recommended above. The young wood should be taken before the blooms are expanded, and the cuttings prepared similar to what I have already described. The young shoots of what is called the second growth, may also be used for cuttings; they should be taken when two full-formed leaves are made, smoothed at the base, and cut down to the first leaf, then planted in a bed of the same construction as above. When they are rooted they may be hardened off and allowed to remain in the bed until spring. Plenty of air in favorable weather should be admitted. In this way they will occupy less room than when placed in pots, and they will stand the winter better. Cuttings of roses, like those of many other hard wooded plants, are more certain of rooting when they are made short, especially if a healthy leaf is attached to them and kept there until they are rooted. This, however, can never be accomplished if the soil in which they are placed is subjected to the alternate action of wet and drought; but by placing wet leaf-mould between the dung and sand, an uninterrupted supply of moisture is obtained, and no water is required, from the time the cuttings are put in until they are rooted in the pots. So suitable is this treatment, that when the bud at the axil of the leaf has been damaged, or otherwise abortive, those at the root are excited and suckers are produced. All kinds of roses will root freely under this treatment.—*R. P. Drummond, Gwernant Park, Cardiganshire, in Gard. Chron.*

◆

GARDEN OPERATIONS FOR JULY.—Clean, leave off cutting from asparagus beds; plant and thin at the beginning of the month beans, beet, carrots, kidney beans, lettuces, parsley, peas, turnips, radishes, and spinach; hoe and thin, stir ground between plants.

BEECH-GRAFTING.—Take scions from the two-year-old wood (one-year-old is useless,) and graft exactly as if you were propagating Apple-trees, except earth up the stocks above the clay balls, so as to leave only the least bud of the scion above the ground.

CLIMBING PLANTS.—The following are superior climbers:—Kennedya Marryattæ, Hardenbergia macrophylla and monophylla, Dolichos lignosus, Mandevilla suaveolens, Clematis azurea grandiflora, and Bignonia Pandoræ.

CUTTINGS.—Nothing is better than silver sand for striking cuttings in. If you use charcoal, it must be a very soft sort, and should be mixed with half its bulk of good soil.

In the beautiful conservatory of P. Greenall, Esq., M.P. at St. Helen's, there is growing a rare specimen of the "cactus speciosissimus," upwards of nine feet high, and has two hundred and fifty blossoms on it. It has been greatly admired, and is certainly a magnificent specimen.

Eve's apple tree (kadura-gaha) is a tree of the middle size, and is found in great numbers. Its leaves are nine inches long and three broad, with about twenty strong fibres branching off on each side of the centre one. Its fruits hang down in pairs from a long stalk. Its appearance is very peculiar, being like an apple, with about one third cut or bitten out. It is a *deadly poison*, and the milk that flows from it is so acrid, that a drop falling on the hand raises a blister. The outside is of a bright yellow color, and the inside is of a deep crimson. It contains a large quantity of small black seeds, like the pips of an apple, embedded in a quantity of scarlet coloured pulp. I have counted fifty-eight of these seeds in one fruit. When ripe, the fruit bursts and the seeds fall out, and the outside shrivels up, and still adheres to the stalk for a considerable time.—*Selkirk's Recollections of Ceylon.*

Reviews, &c.

The Implements of Agriculture; by J. A. Ransome. *(Fourth notice.)*

We have again the pleasure to call the attention of our readers to this work.

The VI and VII sections, which conclude the first part of the subject—in which the author notices the machines principally in use for the tillage of the land and for gathering and harvesting the crop—contain an account of "*Horse-hoes and Rakes;*" of the former he notices *Blakie's inverted horse-hoe, Grant's horse-hoe and moulding plough, Morton's or Lord Ducie's horse-hoe, Clarke's universal ridge plough, White's double action turnip-hoe, Huckvale's patent turnip-hoe, Garrett's patent horse-hoe.* The preference apparently being given to the latter, of which he says:—

"This horse-hoe, invented by Garrett and Son, of Leiston, is suited to all methods of drill cultivation, whether broad, stetch, or ridge ploughing; and is adapted to hoeing corn of all kinds as well as roots. The peculiar advantages of this implement are that the width of the hoes may be increased or diminished to suit all lands, or methods of planting; the axletree being moveable, at both ends, either wheel may be expanded or contracted, so as always to be kept between the rows of plants.

"The shafts are readily altered, and attached to any part of the frame, so that the horses may either walk in the furrow, or in any direction, to avoid injury to the crop.

"Each hoe, or each pair of hoes, works on a lever independent of the others: so that no part of the surface to be cut, however uneven, can escape; and in order to accommodate this implement to the consolidated earth of the wheat crop, and also the more loosened top of spring corn, roots, &c., the hoes are pressed in by different weights being hung upon the ends of each lever, and adjusted by keys or chains, to prevent their going beyond the proper depth.

"That which has hitherto been an objection to the general use of the horse-hoe in this is avoided by adopting a mode of readily shifting the hoes, on a plan similar to that of the steerage adopted in drills, so that the hoes may be guided to the greatest nicety. This implement is so constructed that the hoes may be set to a width varying from seven inches to any wider space; the inverted hoes are preferred when the distance between the rows is sufficient to admit a pair of them; otherwise, triangular or arrow-shaped hoes may be substituted, or any other form that may be considered best for the purpose.

"Two points in this hoe are worthy particular notice: the one being that the blades of the hoes are made entirely of steel, and are attached to the stalks so readily, that as they may become damaged or worn out, they may be replaced by the operator without difficulty; the other, that the position of the frame admits of easy adjustment, so that, according to the texture of the soil, the cutting edges of the hoes may assume a position more or less inclining to the work."

Of the *Rakes* we have notices of—*improved drag rake, Suffolk horse drag rake, Wedlake's horse hay rake, East Lothian stubble rake, Grant's patent lever horse-rake,* the latter being evidently the most perfect—and *Salmon's hay-making machine.*

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European Agriculture and Rural Economy; by the Rev. Henry Colman.

We are indebted to the number of *The Cultivator* for the present month (an American paper, published at Albany), for a notice of this work, which proposes to give permanency to the opinions and observations of the author, formed on his tour through the principal agricultural countries of Europe. Mr. Colman, whilst in Britain, seems to have visited the most important and best cultivated districts, and we have no doubt whatever examined closely every thing which presented itself to his notice or was brought before him. He was thus able to estimate the amazing amount of capital invested in the cultivation of our soil and the breeding and feeding of the vast numbers of horses, cattle, sheep, and pigs, which are necessary for our use and consumption—he was able to see that all our lands are not equally well managed—that some districts having no superior advantages of soil or climate are cultivated in the most careful and judicious manner; whilst others, having greater natural advantages, partake less of the husbandman's care;—these things he was able to see, and of them to furnish forth a correct account. He was able to see that the condition of the farm labourers in many instances was not what it ought to be, and by the blessing of God will ultimately become—whilst in others the labourers were in a position "to be called comfortable." But the rev. author misleads his countrymen when he tells them that the British farm-labourers—

> "Remain a distinct and servile class without any power of rising above their condition. At present the most imaginative and sanguine see no probability of their rising above their condition, of being any thing but labourers, or of belonging to any other than a servile and dependent class. The low state of their wages absolutely forbids the accumulation of any property. They cannot own any of the soil which they cultivate. The houses which they occupy belong not to themselves, and they may at any time be turned out of them. They must ask leave to live, or they must take it by violence or plunder when they will not be suffered to live. Their only home is the grave, and even their repose here is not always secure."

Here our author is altogether at fault. The labourers of *Old England* are no more "a distinct and servile class" than their fellows of *New England*. The absence of "the power of rising above their condition," Mr Colman ought to know, arises solely from their want of knowledge, which is well known to be "power" as well in the old as the new world, and exactly the kind of power required for this purpose—knowledge in this sense being but another term for education, which, as we believe, is becoming more and more within the labourer's reach daily. It is not the low rate of their wages which forbids their rise, for in spite of this bar to advancement, we know many who from the condition of farm labourers have become farmers; but in all these cases the force of natural talent, aided by a somewhat greater scholastic advantage, has impelled them upwards.

Mr. Colman must surely have been reading some account of the agriculture of Russia when he wrote that here labourers "cannot own any of the soil they cultivate!" It would have been well had he studied our jurisprudence as well as our agriculture a little before he made that assertion or the one which follows—he would then, we feel assured, have given a different account of the tenure by which the cottages and gardens of England, those especial patterns of English neatness and love of order, are held, and he would have known that many of them are absolutely the property of the persons who occupy them—in some cases the title being freehold of inheritance, in others, which we incline to think the most numerous, copyhold or of customary tenure,—in either case, no less secure to the owner, and fenced about by the law with as much regard to the safety of property as in the instance of the most splendid of the parks and mansions of our nobility and gentry, where we happen to know Mr. Colman was hospitably entertained: even the mere yearly occupation of their cottages the law most jealously protects to the British labourers, and it is no less our boast now than it ever was, that "an Englishman's house is his castle" whatever its dimensions may be.

An Essay on the growth and Management of Flax in Ireland; by John Sproule. Dublin, S. J. Machen, Westmoreland-street; London, Simpkin and Marshall.

There is no crop the growth of which requires more care than that of flax, and there is none which, in our opinion, is likely to be so remunerative to the grower when properly managed.

We see no cogent reason why flax should not be grown in sufficient quantities at home, not only to supply the present demand of our linen manufactory, but also any demand which may hereafter arise; nor in truth do we see any reason why the manufacture of linen should not in a great degree supersede that of cotton;—under this impression we earnestly call the attention of our readers to the essay before us—they will find it a most interesting account, not only of the growth of flax in Ireland, but also of its growth and manipulation in Belgium.

If to the value of the fibre of the flax we add the value of the seed—and not of the seed only, but of the chaff and light grains, as articles of food for cattle, we can, in truth, see no more valuable crop than flax, for every part of the plant is most useful. As we have never before heard the chaff recommended as an article of food, we shall take the liberty of placing before our readers the following from the text of our author on the subject of seed, as introducing the note, which we also subjoin:—

"A great disadvantage in treating Flax in the Autumn, is the difficulty, in many cases, of preserving the Flax-seed after rippling. In moist weather, and where the quantity of seed on hand is large, it is indeed, extremely difficult to save the seed properly, even under the most careful management. If the capsules or seed-pods be placed together in quantities, after being taken off, rapid fermentation will immediately ensue, to the total destruction of the seed for any purpose afterwards; so that, to guard against this casualty, they must be thinly spread over a boarded floor, or other dry place, and repeatedly turned. In humid weather, a *slight kiln-drying* may be given to the seed, if intended for crushing or feeding, without injury; but if designed for sowing, this process would interfere with its vitality, and render it unfit for the intended purpose."

The following is the note we allude to:—

"On this subject no apology is necessary for placing the following extracts before the reader, taken from a letter addressed by Mr. John Mac Adam, of Belfast, to Mr. Skinner, the efficient and active Secretary of the Belfast Flax Improvement Society:

"I have, during the last three months, purchased upwards of 950 bushels of seed, and expect to get some 300 or 400 more, before Spring. The quality has been much the same as last years' crop, but in many cases superior, principally owing to the greater care and skill now executed by our farmers in preparing the seed for market.

"Besides this quantity of seed, I have bought upwards of 6,000 bushels of the flax bolls containing the seed. I was induced to offer the farmers a market for the bolls, as I found that many objected to saving the seed, not from any doubt of its value, but from not having lofts to spare for drying the bolls, and but very inefficient apparatus for preparing the seed. In the early part of the season I purchased the bolls, just as rippled from the flax; but finding, from the large quantities offered, that I could not have all dried before spoiling, I made it a provision that they should be well dried either in the sun or on a kiln. Every eight bushels of bolls produced, on an average, one bushel of clean linseed.

"The chaff, or bran, is a very excellent feed for cattle, as it contains a large proportion of mucilage, and all the weak seeds that are blown off in the cleaning. I sent samples to some correspondents of mine, farmers in Ayrshire, and they were so well satisfied of its nutritive qualities that they ordered 1,000 bushels; and I have since had orders from Wigton and Dumfries, from others of my friends, to whom I had also sent samples. I have, besides, sold some hundred bushels in this town and neighbourhood principally to cow-keepers; and, in every case, it has given great satisfaction. The low price of linseed cake and linseed meal has caused an increased demand for these articles in this country; and their value, as food for all kinds of stock, is beginning to be appreciated.

"The price I gave this year, for linseed, was from 3s. to 4s. 6d. per bushel, and 6d. per bushel for the bolls: and even at these comparatively low prices, the farmers expressed themselves well satisfied of the advantage and profit to be derived from saving the seed. They had all kept a considerable part of the produce as food for cattle, and were fully convinced of its utility."

We cannot too strongly recommend Mr. Sproule's little work to our readers, which, in addition to its own merits, has the advantage of containing in an appendix "Dr. Kane's Chemical Constitution of Flax and Hemp," with tables of the various analyses.

The Veterinarian, June. London, Longman and Co.

At the recent examination at the Edinburgh Veterinary College, of the number admitted to practice, four were selected "from the superiority of their merit" to contend for the prizes given by the Highland and Agricultural Society and Professor Dick, and we are glad to find that of this number three were English, viz.—Mr John Barlow, Wimslow, Cheshire; Mr. Peter Taylor, Manchester; and Mr. H. Cherry, of Clapham Common, Surrey.

The prizes were awarded as follows:—that for general proficiency to Mr. John Barlow, of Wimslow, Cheshire, and that for the best anatomical preparation to Mr. P. Taylor, of Manchester. An additional prize was also awarded to Mr. G. D. Moffat, of Edinburgh, for the second best preparation; and the Thesis Medal of the Medical Society of the College was gained by Mr. A. H. Cherry, of Clapham Common, Surrey.

The following Contributions to Cattle Pathology, appear to be from the pen of the first prize man, Mr. John Barlow.

"Observing of late in your journal a lack of matter relating to the diseases of horned cattle, I am induced to send you the following cases, which occurred during Professor Dick's late visit to London: not that they possess in themselves any thing peculiarly new or striking, but to convey an idea of the system here pursued, and the benefit which must result from entrusting out-patients to students, such responsibility inducing a necessity to form for themselves proper opinions, their correctness or incorrectness being daily verified by the Professor himself. As cases of out-patients occur, they are placed under the immediate care of senior students, each taking his turn, with whom the rest are at liberty to visit: his particular duty being to report daily, or oftener, as to the progress of their patient.

Case I. April 7th.—A cow, belonging to Mr. Swan, cow-keeper, Jamaica-street, which had for some weeks previously, according to the owner's account, been off her feed, dull in appearance, with unhealthy skin, staring coat, and subject to occasional distention of the paunch—was placed under the care of Mr. Tennant. On visiting her she manifested the following symptoms: great distention of the paunch—pulse 75 and weak—breathing, of itself not materially impaired, but rendered difficult in consequence of tumours within the parotid glands pressing down the larynx [the upper part of wind-pipe]—feeble cough—skin firmly adherent to the body and harsh, with rough coat—slight yellowness of mucous membranes [the skin that lines the nostrils, mouth, throat, &c.] constipation—arched back, and pain on pressure over the right hypochondriac region [immediately over the liver.]

From carefully considering the nature of these symptoms, and taking into account the period of their continuance, we were at once convinced that the case was one wherein extensive disorder of the liver existed, with general tubercular diathesis.

Although the presence of hoven might itself have induced us to suppose the stomachs were chiefly affected, yet yellowness of the mucous membranes, constipation, and pain on pressure over the right hypochrondriac region were conclusive evidence of diseased liver, which led us further to suppose that deficiency of biliary secretion was the cause of constipation and hoven, by affording imperfect stimulus to the bowels. The peculiar cough, unhealthy coat, and tumours in the parotid glands, further convinced us that the disease was one of a tubercular character, and accordingly led us to form an unfavorable prognosis.

As our employer was desirous to have some means, experimental or otherwise, adopted, we employed the following, being merely of a palliative description: Ol. lini et sp. tereb. [linseed oil and spirit of turpentine] were administered to relieve hoven with temporary benefit. She then got for a few days, aromatic purgatives, with small doses of hydrarg. submur. [calomel]; but in consequence of their affording no permanent benefit, and swelling of the paunch returning, on account of our patient's emaciated condition, we advised her being destroyed, to which the owner consented.

Post-mortem appearances verified our prognosis [indiction]. Extensive disorganization of the liver existed, occasioned by the development of tubercles [*small* internal pimple or tumour], many of these, in some parts, uniting during their suppurative action, had formed large cavities containing pus [matter]. In other parts of the same organ they were of more recent formation, small, hard, and gritty in consistence. The mesenteric glands [glands near the guts and within the membrane that surrounds them] were much diseased, and considerable effusion existed in the abdomen.

Diseases of the same character existed in the lungs. Tubercles of various sizes and stages of development were found throughout their substance. The bronchial glands [are within the lungs, or rather between the division of the larger air tubes] were similarly affected.

On examining the parotid glands, [near the jaw,] we found connected with them and the Eustachian [the canal leading from within the throat to the ear] several large cysts [small bags or purses] containing pus.

Case II. April 12.—Puerperal peritonitis, with hysteritis [inflammation of the lining membrane of the belly and of the womb, coming on in animals immediately after calving, &c.] A beast was to-day brought to the college-yard for examination. The owner stated she had calved eight days previously, since which time she had been unwell, betraying great dullness—lying down rather frequently, but shortly rising again, yet without manifesting any urgent symptoms of pain—want of appetite—great weakness. The owner said her breathing was somewhat quickened, but could give us no information respecting the pulse. He said she had not kicked or struck at her belly.

The examination was undertaken by Messrs. Tennant and Barlow, in the presence of the other students. The abdomen contained from five to six gallons of serum, [a thin watery fluid] wherein floated large flakes of lymph [a white kind of adhesive matter.] Extensive and intense peritoneal inflammation [inflammation of the peritonium or the lining of belly] existed, involving both mesentery, omentum, [are both portions of the peritonium] and that portion covering the abdominal parietes [walls of the belly, or the whole thickness of flesh cut through to get to the bowels]; but, what is remarkable, not implicating that reflected over the uterus [womb.] The internal mucous coat of this viscus, [organ,] however, displayed extensive inflammation, and contained a large quantity of dark-brown offensive fluid. More than a normal quantity of fluid existed in the pericardium.

Although we did not see this beast during life, still, from the owner's account, which corresponds with our own observation in similar cases, *it is worthy of remark* that the symptoms of peritonitis in the cow offer considerable difference from those observable in the horse with respect to intensity. In the cow assuming speedily more the character of low fever than the high state of inflammatory action invariably present in the horse under similar circumstances.

Case III. April 13th.—This case we merely relate to shew the treatment adopted at this College, under circumstances which are not only frequently occurring here, but very commonly take place in private practice, and are often difficult to manage.

Mr. Scott, dairy-keeper, Easter-road, applied for assistance to a cow that had calved sixteen days before, but still retained the placenta [after-birth], and exhibited great constitutional weakness, want of appetite, suspension of rumination, low fever, and pain on pressure over the right iliac region [the part just above the groin]. This case was placed under Mr. Scriven. Considering these symptoms to be occasioned by retention of the placenta, and aggravated by an absorption of its partly decomposed substance acting as a poison upon the vital powers, we proceeded to remove it, which, by proper means was effectually accomplished manually. The uterus was then well syringed with tepid water containing chloride of lime. This was several days repeated. She then got zingib. rad., [ginger-root,] gentian. rad., [gentian root,] et [illegible] sulph. [sulphate of iron], in thick gruel with ale, daily. Improvement was continuous till the 17th, when violent diarrhœa [looseness [illegible] purging] came on. This was combatted with thick gruel, creta ppt. [prepared chalk,] zingib. rad. [ginger] et gum. opii. [gum opium.] Under this treatment she rapidly improved, and is now from under our hands.

Another cow, belonging to Mr. Swan, has also for the last fortnight been under the superintendence of Mr. Siddell for chronic induration [hardness of some standing] of the udder of a very severe character, occasioned by retention of milk from the presence of tumours within the two hindmost teats. Under the diligent employment, in the first place, of fomentations, and then ung. hydrarg. cum camphor. [blue ointment and camphor], and, latterly, ung. iodin. [iodine ointment], together with frequent and careful evacuation of the milk by the teat syphon, she is now recovered, yielding milk freely and largely as before.

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Fairs in Wales for July.—1, Corwen; 2, Festiniog: 3, Sputty; 4, Dolgelley; 5, Llandrillo; 7, Caerwys, Northop; 10, Bala; 15, St. Asaph; 18, Denbigh; 20, Newmarket; 24, Llanrhiader; 30, Llamamon in Yele.

FOR JULY.—1, Wigan, Ellesmere,
l; 3, Leek, Shrewsbury; 4, Haslingden,
ld, Uttoxeter; 5, Chester, Lancaster,
Castle, Wenlock; 8, Oldham; 9, York,
Garstang, Leeds; 10, Congleton,
Peterborough; 11, Macclesfield; 12,
l, Leeds, Howden, Macclesfield; 13,
Neath; 14, Garstang; 15, Up-Hol-
iswick; 16, Mallock, Burton; 17, Ca-
18, Warrington, Overton, Huntingdon;
philly, Mortlake; 20, Honiton, Ross;
ham, Frome; 23, Lane End, Colchester;
lem, Pocklington; 25, Ashton under-
iverpool, Reading, Barnard Castle; 26,
Lewes, Portsdown; 27, Newport,
m; 29, Mountsorrel; 30, Bolton,
31, Uttoxeter, Uxbridge.

MANURES.

ned are the latest prices of several sorts
re:—
st, 16s. per qr.
h Bone, 15s. per qr.
Guano, £8. per ton. 15s. per cwt.
10s. to 12s. per cwt., according to
ity.
st, £6. to £6. 10s. per ton
ke, £6. per ton
, at the water side, 32s. 6d. per ton;
and housed, 38s. to 42s. per ton.,
of Soda, 15s. 0d. (duty pd.) per cwt.
Potash (saltpetre) 26s. per cwt.
ion for Turnip Fly 10s. 6d. per packet,
ent for three acres.
of Ammonia, 24s. per cwt.
of Lime, 12s. per cwt.
t, £3. 12s. 6d. per hhd. sufficient for
acres.
, 28s. and 42s. per cwt.

The Markets.

AT *has recovered its firmness in most of*
ing provincial markets, although an arri-
anadian flour (the first which has come
) at Liverpool caused a turn in favour of
r, upon the expectation that other cargoes
eedily arrive. We are satisfied from all
seen and heard that although the breadth
nder wheat is fully as large as usual,
rns will be much below an average; dis-
n some places making sad havoc, whilst
the appearance of the plant is good:
wever, still depends upon the weather;
ning season has been favourable.

EY, OATS, *and* BEANS, *are everywhere*
erable, and except in some cases of late
or fresh land lying upon a moist bottom,
uce neither grain nor straw; the prices,
of the two latter particularly, are, beyond all calculation, too high in reference to the price of wheat. A slight decline in oats has been submitted to in London, but chiefly, we apprehend, in consequence of a rather free supply.

BEEF *and* MUTTON *are rising in value, as must be expected from the want of grass, whilst store stock of all kinds are a perfect drug.*

HOPS.—*The accounts are very contradictory from the various hop districts.*

LONDON, June 24.		Per Qr.	
WHEAT, Essex and Kent, new, red		56	60
White	58	60	64
Irish		0	0
White		0	0
RYE, old		30	36
New		36	—
BARLEY, Grinding		30	32
Malting		34	36
Chevalier		36	37
Irish		30	32
Bere		28	30
MALT, Suffolk and Norfolk		60	62
Brown		58	60
Kingston and Ware		60	63
Chevalier		60	63
OATS, Yorksh. & Lincolnsh., feed		23	25
Potatoe		25	27
Youghall and Cork black		22	23
Cork, white		22	23
Dublin		21	22
Waterford, white		21	22
Black		22	23
Scotch feed		24	26
Potatoe		26	27
Limerick		21	24
Londonderry		22	23
BEANS, Tick, new		36	38
Old, small		38	40
PEAS, Grey		35	36
Maple		36	38
White		35	36
Boilers		36	38

SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..41
Mustard, White...... 7 10
Brown .... 8 11 per bush.
FLOUR, Town-made — 50
Suffolk.... 40 42 per sk. of 280 lbs.
Stockton and Norfolk .... — 40

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		42	44
Hamburgh		40	42
Rostock		40	42
BARLEY		26	28
OATS, Brew		17	19
Feed		15	17
BEANS	19	24	28
PEAS		28	30
FLOUR, American, per barrel		—	25
Baltic		24	25

LONDON AVERAGES.

		£.	s.	d.
Wheat	5015 qrs.	2	16	10
Barley	1190	1	13	2
Oats	35935	1	2	11
Rye	141	1	12	1
Beans	1385	1	16	7
Peas	476	1	16	5

SEED MARKET.

	s.		s.
Canary, per qr.	58	to	60
Carraway, per cwt.	58	to	62
Clover, red, English	60	to	74
„ „ Foreign	64	to	74
„ white, English	100	to	130
„ „ Foreign	84	to	125
Coriander	15	to	20
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000 £10		to £10	15
„ „ Foreign, p. ton £6		to £7	5
Mustard, white, per bushel	10	to	13
„ superfine „	—	to	--
„ brown „	17	to	20
Rapeseed, English, per last	£28	to	30
Tares, English, spring p. bushel	4	to	5
Foreign „ „ „	3	to	5

CHESTER, June 22.

	s.	d.	s.	d.
Wheat, white, 75lbs.	0	0	9	0
Ditto, red	0	0	9	0
Ditto new	9	3	9	6
Oats, 46lbs., new	3	6	3	8
Grinding Barley, per 60lbs.	4	8	4	10
Malting ditto, 38 qts.	5	0	5	3
Beans, new, per 80lbs.	6	0	0	0

DUBLIN CORN EXCHANGE—June 21.

	s.	d.		s.	d.
Wheat, white (per brl.)	33	0	to	34	0
„ red do.	30	0	to	32	0
„ inferior, do.	28	0	to	29	0
Oats, feeding, new	11	6	to	12	0
Flour, first (per cwt.)	18	0	to	19	0
„ second do.	17	0	to	17	6
„ inferior do.	14	0	to	16	0
„ third do.	6	0	to	10	0
Oatmeal do.	10	6	to	11	6

WAKEFIELD, June 21.

The millers have purchased freely of Wheat last week, they are not disposed to increase their stocks this. Fine fresh thrashed Wheats have been taken off at fully last week's prices, and all other sorts maintain their quotations. Barley is in fair request for grinding purposes, at a little improvement in value. Oats, Shelling, and Beans in steady request, without any change *in value.*

LIVERPOOL, June 25.

	s.	d.
Wheat, Eng. wh., new, ℔ 70lbs.	8	4
Ditto, red	8	2
Irish white, new	7	10
Ditto, red	7	6
Egyptian	6	6
Oats, Eng. and Scotch, ℔ 45lbs.	3	2
Welsh	2	11
Irish, new, best mealing	3	0
Barley, English, per imp. qr.	33	0
Irish, Scotch, and Manx, per 60lbs.	4	4
Feeding	4	3
Rye, per imp. qr.	30	0
Beans, English, per imp. qr.	38	0
Irish, &c.	35	0
Foreign	36	0
Egyptian, per 480lbs.	34	0
Peas, English, per imp. qr.	40	0
Foreign	38	0
Malt, per imp. qr., fine	62	0
Flour, English, per 280lbs.	42	0
Irish, extra-fine	40	0
Foreign, duty-paid, per 190lbs., U.S.	30	0
Canadian	29	6
Oatmeal, English, Scotch, and Welsh, per 240lbs.	22	6
Irish	22	6
Indian Corn, per 480lbs.	34	0

Cattle Markets.

LONDON, SMITHFIELD.

June 24, 1844. ℔ st. of 8

	s.	d.	
Inferior coarse beasts	2	6	to
Second quality do.	2	10	to
Prime large Oxen	3	2	to
Prime Scots, &c.	3	10	to
Coarse and inferior Sheep	2	10	to
Second quality do.	3	6	to
Prime coarse woolled do.	3	8	to
Prime Southdown do.	3	10	to
Large coarse Calves	3	4	to
Prime small ditto	4	2	to
Large Hogs	3	2	to
Neat small Porkers	3	10	to
Pigs, quarter old store, each	0	0	to

LIVERPOOL, June 24.

There was a good show of cattle at ma to-day for this time of the year, which met dull sale, at the prices of last week. Beef, to 6¼d, mutton, 6d to 6½d, lamb, 6d to 6½d

CATTLE IMPORTED INTO LIVERPOOL,
From the 17th to the 24th June.

Cows	Calves	Sheep	Lambs	Pigs
1327	16	6434	1335	4744

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THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

JULY—1844.

ADULTERATION OF FLOUR.

attention has lately been called to this ion by the appearance in the public s of two hearings in petty sessions ist a miller in the manufacturing dis- , first, for having in his possession um for the purpose of adulterating or flour; and, secondly, for mixing um with flour.

e defence was that the defendant car- on the business, not of a miller, in the ral acceptation of that term, but of a er of sizing for manufacturing pur- s; and it was stated by Dr. Lyon fair, who had analyzed the flours found defendant's premises, that not only gypsum commonly used by the calico ters and weavers in the making of size, that, on the authority of Dr Ure, whose Dr. P. quoted, sulphate of barytes other mineral substances were also d; the object being to give thickness weight not only to the sizing but to the , and to add also consistency to the ring matter used in print works. We much gratified in having the oppor- y which was afforded us on the hear- f the latter of these cases, of being nt at the examination of the learned ist to the Royal *Agricultural Society;* and must say, that the Dr. by his analyses fully exonerated the defendant from the charge which by inference would be fixed upon him, of having sold for food any portion of these mixed flours: and although the offence against the act of parliament of mixing flour and gypsum was fully proved, and the defendant mulct in a penalty, yet, in the very few cases where flours had been sold by him for food, they were found by Dr. Playfair to be of an extraordinary degree of purity. We are glad of this for the sake of human nature—for the sake of those moral attributes which we contend all possess, and which ought, in every case, to prevent so dangerous and abominable an adulteration as that which the act of parliament is intended to prevent.

Our object in noticing this matter at length is to draw attention to the knavery of those manufacturers, who, for the sake of a trifling gain, impose upon unwary purchasers the weight and thickness of sulphate of barytes and gypsum, ingeniously fastened upon cotton cloths, for the weight and thickness of the cotton itself: and we would urgently put it to the persons perpetrating these frauds how long they can continue to be practiced with impunity; not that we think, as some do, that an act of parliament is necessary to restrain them, for our conviction is, that the evil will cure itself in the gradual want of a market for such fabrics, which will certainly ensue—the attendant evil being that innocent men will suffer with the guilty in the general ill character which British goods will obtain as compared with those of foreign make, in the manufacture of which these impositions have not been practiced.

To the millers who have taken up the trade of size-making we have a word of advice to offer, that so long as the act of parliament under which these convictions took place is unrepealed they should have nothing whatever to do with gypsum upon their premises, or with the mixing of mineral ingredients: if these are to be mixed let them be mixed in Manchester, where the usages of the trade are better understood, and where evidence can be at any time procured, should the deleterious mass be attempted to be used in any way for food.

◆

THE POTATOE BLOSSOM.

It has been long known to horticulturists that during the periods a plant is flowering and forming its seed, it requires more nourishment and withdraws from the soil more of certain of its constituents than at any other time of its growth: it is also known that at such times the roots, as well as the branches, make slower progress in their growth, the whole force and energy, as it were, of the plant being directed to the development of the blossoms and the maturing of the seeds, by which its species is to be propagated. This being a well ascertained fact, it becomes obvious that to remove the blossom from a plant is to cause a greater exuberance of growth in the various other portions of it—branches, stems, and roots, all partake, after the removal of the blossoms and seed pods, a *greater degree* of the nourishment provided *by the plant for their* formation and perfection, and withdrawn either from th
or the atmosphere.

With the view, therefore, of prom
the growth of the tubers, it has becc
regular practice with many farmers a
season to employ women and childr
picking off the blossoms from their
toes, a practice very much to be
mended, and one which is said to h
highly beneficial effect upon the *qual*
the roots as well as their quantity.
the purpose of raising *seed* for potatoe
practice seems absolutely necessary:
ing the present season of doubtful ger
tion it has been ascertained that seed v
was the produce of plants from whicl
blossoms had been plucked has germi
in a soil where seed grown in the
way had decayed, the treatment of
being in every respect similar. Thus
posing no advantage to arise in the qu
of tubers, to have them of a more he
description, and of a quality better ad
for seed is an important consideration
one which will naturally influence all
not having yet adopted the practic
desirous, as who are not, of ensuring
future crops, to try so simple and sc
nomical an experiment.

◆

INSECT IN WHEAT.

My wheat is much infested with an
not unlike a louse in appearance;
ear which I have examined, and I
looked carefully through a great nu
harbours a considerable quantity of
some appear full grown, and others
young; they attach themselves to th
of the grain stalk, and on drawing
the ear and separating the grains the
be readily distinguished. I observe
red rust amongst the wheat. Will so
your readers, in other parts of the co
communicate the result of their ob
tions on the wheat crops? The news
reports I am slow to place much confi
in, but direct information from the fa

selves, through the medium of your ana, would be very desirable: the gen- mpression is that the wheat crop will greatly this year, now I have some ts about the accuracy of this impres- O.

◆

THICK SOWING.

y farmers, I know, give a preference e broadcast system, under the impres- that a larger increase is produced, by a distinct and regular distribution of eed-corn. On that point their argu- t may be somewhat correct; for it is xiom which I believe cannot be con- rted, that where many seed-corns are sited together, and that when their us roots come into contact, many of degenerate or wholly cease to obtain ction. That may, however, be obvi- by a drill-machine so constructed as eposit with greater precision a fewer ber of corns in the seed-cup. I have where read of an experiment made in ling wheat, where an inverse ratio to umber of grains placed in the dibbled s was produced, viz.:—

ls deposited in the same hole	prod. 3	ears of wheat.
ditto	ditto 3	„
ditto	ditto 2	„
ditto	ditto 3	„
ditto	ditto 4	„
ditto	ditto 4	„
ditto	ditto 7	„
ditto	ditto 15	„

statement may be correct, and if the ulturist could depend on the attention ired from their labour to deposit a single in each hole, great benefit might be esult; but where the process, I believe, sually practised, payment at certain s per bushel is made, and to dispose e quantity holds out too many tempta- s to the seedsman. All this may be ided against by proper attention to the ing of a well-constructed drill, when dvantages to be obtained are indisput- , by the facility, which should never rgotten, is the ready employment of- l to children, who may *soon and easily* accomplish the work well; and, by their time being employed, providing for their own maintenance, making them more useful and estimable members of society, as well as contributing to the establishment of their health and future well-doing.—*Report of the Cardiff Farmers' Club.*

◆

LUCERNE.

A correspondent in a London cotemporary recommends the following as the best plan of obtaining excellent lucerne:

"Select a dry piece of land, either rather light or good mixed soil, but not stony, strong, or clayey, certainly not the least inclined to be wet or springy, with either a sand or chalk subsoil—the latter is preferable; let it be made perfectly clean, especially from couch-grass, and deeply ploughed, but if on a small scale, I would say by all means have it dug by spade, or, which is far preferable, with a four-pronged carrot fork (prongs 16 inches long and a little flattened), digging in plenty of good rotten farm-yard manure. When the ground is ready for the seed, open drills with a hoe 17 or 18 inches apart, and not more than 1½ or 2 inches deep; then put the seed in a glass wine-bottle with one or two quills stuck in with the cork (which is cut on the sides to admit the quills); this will deposit the seed more regularly than by hand into the drills, which are then raked over; about 24lbs. of seed per acre is sufficient, which can be procured of any respectable seed merchant, at 11d. or 1s. per lb. I consider May the best time for sowing, but if the ground is not too dry for the seed to vegetate, any time before the middle of August will do; but if the land is not perfectly clean, let the sowing be put off till the spring, and without a crop of corn. It is fit to cut for a first crop of hay generally from the 20th to the 28th of May, the second year after sowing (this year it was a fortnight earlier), and for a second crop when it comes into blossom; it takes a longer time making into hay than grass, as it is better only turned, not shaken out, otherwise much leaf is lost. The crop must be well manured every year in Jan., Feb., or beginning of March, and the ground between the drills kept perfectly free from weeds by hoeing in dry weather, and picking the grass out of the drills where the hoe would cut off many of the plants. The grand secret in growing lucerne, I am persuaded, is in keeping it clean, and, when kept so, no green crop can bear any comparison in value; it is very far superior to tares. I have now a third crop fit to cut, 26 inches high, on the same ground I cut for hay only five weeks since. No lime must be used for manure. I am inclined to think guano mixed with farm-yard manure would answer well. If the quantity to be laid down be more than one acre the plough and drill must be used, in which case it should be put in not more than two inches deep."

AGRICULTURAL EDUCATION.

The conviction of all who possess an acquaintance with this country as to the backward state of our agriculture, the capability of the country for becoming preeminent in that respect, and the pity, or rather ridicule constantly lavished upon us for not availing ourselves of the means within our reach of effecting a reformation in this respect, will, we trust, have the good effect of setting us all anxiously to inquire how this may best be effected. Leaving the weighty consideration of leases, compensation for improvements, effect of absenteeism, of middlemen, of ignorant agents, &c., &c., to the able commissioners now investigating these matters, we shall restrict the few observations we purpose to make to reiterating our advocacy of agricultural education for the children of the working classes.

That this may be effected without incurring expense, either to the nation or to individuals, we have proof in the success of Mrs. Gilbert's schools at Eastbourne, Sussex, a model which, we have not slightest doubt, may be adopted on a sc almost unlimited in extent and advant to this country. Mrs. Gilbert's school a few acres attached to it, for which schoolmaster, who is a good practical farn pays a fair rent; he devotes a portion each day to the instruction of the childr in reading, writing, and accounts; the mainder is devoted to working in the far which is cultivated entirely by the man labour of himself and children; the cat are house-fed, manure is economized, a we have the testimony of impartial eviden as to the complete success of the expe ment, as a means of imparting agricultu and ordinary education. The payment the master is one penny per week fr each child, together with its labour on t farm. Formerly, it would have been di cult to find a number of persons capable undertaking the management of such establishment, but happily, that difficul no longer exists. Amongst the large nu ber of young men who have already o tained, at the model school of the Natio Board of Education, and at the agricultu seminary, Templemoyle near Londonder an education, by which they are fitted conduct such schools, a sufficient numb would be found, which a little liberality the part of the owners of estates, wou soon induce to apply their energies in th way. To set this machinery, which wou speedily double the agricultural produce this country, in operation, it would only necessary that the owner of each esta would set apart a ten-acre farm of fa land; erect upon it a plain comfortab cottage, which should contain a schoo room; attach the necessary farm-office and let the land on the same terms th similar land brings *without* buildings. W earnestly trust that thus some better pla will at length receive the attention of ou landed proprietors, to which it obviously entitled.—*Irish Farmer's Gazette.*

THE NEW POOR-LAW BILL.

The parliamentary news of the past month has been without interest to the agriculturist if we except the passing of the new poor-law. Most of our readers are doubtless aware that it proposes a complete alteration on the subject of bastardy; whilst the present law throws all the onus of maintaining illegitimate children upon the ratepayers, and boards of guardians are almost powerless in reference to any possibility of recovering from putative fathers the limited sums ordered by the justices for the support of such children (indeed many unions have a standing order against any attempt being made with the view to recover such sums,) the new law proposes to take all power and liability (except in certain cases) from the guardians, and to transfer it to the mother of the child, who is solely liable for its maintenance unless she can bring forward colateral proof before the justices that the man she charges with being the father of her unfortunate offspring is really likely to be so, in which cases the old power, *i. e.*, the power the justices possessed previous to the act of Wm. IV, is returned to them, viz., to make an order, and to punish summarily for disobedience to such order. Now let us stop for a moment to enquire what is to become of the child supposing its mother unable to bring such colateral proof as we have described—the father, for the man charged may really and in truth be so although never seen in a situation likely to lead to his paternity, escapes, and the unfortunate girl, having lost her character, loses her place, and is yet to maintain herself and the child—the law says so; but in the name of common sense we would ask the right honourable gentleman, the Home Secretary, how? and how, if she cannot, will she expose it? will the system lead to concealment of birth?—to infanticide—to a moral degradation, in a national point of view, tenfold more injurious than the mere act for which she alone is to be held liable by law, we fear it will. *In the* not very tender mercies of the relieving officer and the overseer, the unfortunate mother of a bastard child has now a something to lean upon (a slender reed we admit,) whilst pursuing her case against her betrayer; but how, when she has none to apply to either for advice or assistance in her hour of need and in her travail? we shudder to contemplate the midnight massacres of unoffending victims, of their parent's guilt and the unstatesmanlike measure of Sir James Graham, for we fear that, driven to desperation, all hope of assistance being cut off, mothers will prefer a desperate act of criminality rather than see their children starving in their arms, themselves at the same time, contrary to the *spirit* of the poor-laws, actually dying for want.

Equally unfortunate in the bill we are considering has the right honourable bart. been upon another subject, viz., the power given the commissioners to detach townships from unions and to set up new unions. The commissioners and the assistant commissioners seem to have a positive frenzy for building union houses, as though the cost to the country was nothing compared with the carrying out of a system. But we cannot explain ourselves better upon this part of the subject than the writer of the following letter, which we copy from a local cotemporary, has already done:—

"Sir,—I observe from a report of the proceedings of the House of Commons on the poor-law amendment bill, that power is intended to be given to the poor-law commissioners to detach townships from one union and to add them to another, or to form new unions where the present existing unions may be too large. As this latter proceeding would entail the necessity for more union houses and more paid officers I am sure the landlords of Cheshire need only to have their attention drawn to this enactment to ensure the exertion of their influence to prevent its being acceded to by the upper house. If the power had been conferred upon the commissioners to *consolidate* unions wherever practicable, so as to save the expense of too much machinery, it would have been much better. There can be no necessity whatever for two union work houses, and all the concomitant expenses, where one will do, particularly as the feeling of parliament now leans to the administering of out-door relief.

"I am, Sir,
"A Guardian."

Deeply interesting to all our readers as these questions must be we promise to recur to them whenever it shall appear to us that the rates with which the soil is already too much burthened are likely to be increased upon us, on the one hand or on the other, whenever measures are brought forward which shall, in our opinion, operate prejudicially upon the great mass of the people.

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ON THE NATURALIZATION OF THE ALPACA OF PERU.

This is one of those subjects which is equally interesting to the Philanthropist, the Agriculturist, and the Manufacturer. To the first, as an additional benefit to our common country, and to the other two as an additional means of available enterprise and profit; and, in particular, *to the proprietors and tenants of the mountain, and other waste lands of the United Kingdom of Great Britain and Ireland.* The Alpaca is one of the four species of American camel found in the *cold* districts of Peru. The other three are the Llama, the Guanuco, and the Vicuna. These last are not reckoned of such utility as the Alpaca. The colour of this animal is sometimes entirely white, and others entirely black, and occasionally party-coloured. *The meat is good*—that of the fawn is best and most delicate. The Alpaca bears *a heavy fleece of wool*, while the others have only a short coat, and are better adapted for, and used in, carrying burdens.

It is a maxim well understood by all, as well as the merchant and manufacturer, that the cultivation of the land is, and ought to be, the constant care of a wise legislature, inasmuch as all classes of the community are dependent upon it for support; but when, *besides food*, agriculture can be *made to yield* the primary and essential part of a community, the consumption o which is a clear gain to the whole amoun of labour employed in its production, thi branch of industry deserves more than *ordinary* encouragement. Whoever, therefore, places within the reach of his countrymen a *new raw material*, calculated to stimulate their inventive powers and exercise their industry, renders a service to the state, and deserves to be held as a public benefactor; for if it is admitted that want of employment is the immediate cause of that distress which prevails among our artisans, and drives so many to the precarious experiment of emigration, it necessarily follows that, provided their time can be profitably filled up at home, relief is afforded in proportion to the demand of the article which they produce. Where, then, can we procure a domestic animal which we do not already possess, combining the desirable advantage of serving as a new farming stock, and at the same time furnishing to the manufacturer an additional raw material, grown on our *own soil*, and adapted to our looms? That *desideratum*, we do not hesitate to state, will be found in the Alpaca, and which will interfere very little with sheep pasturage. *The wool of the Alpaca is applicable by its fine quality and glossiness to the purposes of silk*—and thus not in the least intermeddling with either the growers of British sheep's wool, or worsted spinners and woollen manufacturers.

On the whole, we are assured, these animals will, at no distant day, *be a staple article* of this country. A fine specimen of the Alpaca (male and female), jet black, *with a young one, a few days old*, may be seen at Mr. Stirling's of Craigbarnet, Stirlingshire, and which are to be shewn at the ensuing meeting of the Highland Society, to be held at Glasgow in August. These animals, we are informed by Mr. Stirling, have stood the winter without injury, and are in the most robust health. Mr. Stirling is of opinion they are more hardy than our *native* sheep, and could live where they would perish, either from want of food or cold—*i. e.* they would live on *coarse bent*, and the roots or succulent part of that vegetable; and, from their skin being more impervious, they are physically capable of enduring more cold.

We observe the Kings of Prussia and Bavaria are about to import Alpaca flocks, and, we very much fear our continental neighbours will forstall us in the naturalisation of this animal, if some patriotic individuals do not take the matter in hand, or some aid from government is obtained. The subject is well worthy of inquiry at the hands of government, and the Scottish and Irish landowner, or wherever there is *mountain* or *waste* lands. *There can be no doubt of the climate being suitable—S. Farmer.*

◆

Cattle Insurance.—We are glad to observe, by an advertisement in the agricultural papers that the *London Mutual Cattle Insurance Association* admits accidents as well as all diseases to protection, without increasing their rates. This is a most important addition, and one well calculated to increase their already extensive business. The power of having such a useful society to fly to in this time of disease must be very acceptable to the farmer, for we regret to find that sad havoc has been made in many herds. A gentleman near Chester has lost upwards of fifteen cows by a new disorder. They were seized with madness which destroyed them in a few hours. At Middleton, near Lancaster, Mr. Robinson, has lost eight head of cattle by this complaint; it attacked them suddenly in the head, and carried them off at once. It was brought amongst his cattle by a strange cow he purchased. Mrs. Farnival and Mrs. Woolliscroft, of Chester, have had losses, by constipation of the manifolds, but in these cases the damage was promptly made good by the London establishment.

Farm Buildings Bill.—The government have just introduced a short bill, to amend the law as to burning farm buildings. It is prepared and brought in by Sir J. Graham and the Solicitor General, and contains four clauses only. They enact that whoever shall unlawfully and maliciously set fire to any hovel, shed or fold, or to any farm building, or any building or erection used in farming land (whether the same shall then be in the possession of the offender, or in that of any other person), with intent thereby to defraud any person, shall be guilty of felony, and on conviction shall be liable, at the discretion of the court, to be transported beyond the seas for the term of the natural life of such offender, or for any term not less than 15 years, or to be imprisoned for a term not exceeding three years. Persons setting fire to any hay, straw, wood, or any other vegetable produce, in any farm-house or farm building, or to any implement of husbandry therein, with intent to injure or to defraud thereby, will be deemed equally guilty of firing the said farm-house or farm building. This act is to be deemed a part of the 7th William IV. and 1st Victoria, cap. 89, the provisions of which it merely proposes to extend.

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THE DUNMOW FLITCH.

We are glad to find that Dunmow still glories in a flitch of bacon, and that the "married couple" who shall come before the judges duly qualified may still claim the savoury and substantial gammon. The list of premiums offered by the "Dunmow Agricultural and Labourers' Friend Society" lies before us, and we think many societies of greater pretension might take useful hints from it; though, by the way, we do not exactly see how the society can call itself an agricultural society, a labourers' friend society it certainly appears to be, but as to agriculture, with the exception of its ploughing match, there is no one thing for which prizes are offered by the society which may not be as well the subject of competition amongst manufacturing labourers (who are not resident in large towns) as amongst agricultural; indeed, some of the premiums are expressly offered to servants *not agricultural.* The class of prizes to labourers for good conduct in the management of their families have our hearty concurrence, nothing so much tends to elevate the character of a population as care in this respect, and no object is more worthy the attention of those who have in any degree the direction of the energies of the people. We read, therefore, with pleasure, amongst other of the Dunmow premiums, the following:—

"To the Married Couple, Labourer and his

Wife, who shall have brought up the greatest number of Children, and placed them in respectable service, without any, or with the least parochial relief, a GAMMON OF BACON."

[We thank our correspondent for his communication as to this meeting, and shall be glad to hear from him again.—E. F. H.]

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BURTON-UPON-TRENT FARMERS' CLUB.

AT the usual monthly meeting, Mr. Lathbury read some remarks on The Application of Steam to Agricultural Purposes. He had erected a steam-engine on his farm, and had applied its power to a threshing-machine, a chaff-cutter, and a corn-crushing machine, and had connected with it an apparatus for the steaming of cattle provender. The outlay had been considerable, and would have been better repaid on a larger farm, as the engine and machinery was capable of doing three or four times the work he required it to do. Still, taking into consideration the saving he had effected in threshing his corn, and in a more economical plan of feeding his cattle and horses through the winter, the result had been on the whole very advantageous to him. The whole outlay for his six horse-power engine, and the rest of the machinery, was about £180. The interest on this sum, together with an allowance for wear and tear, he calculated at £15 15s.. He had used his threshing-machine 23½ days. He required, on an average, the labour of one man and four women, besides his own superintendence, and his coals cost about 2s. 6d. each day. The whole expense in labour had amounted to rather more than £8. Reckoning wheat at 5d. per bushel, barley at 2s. per quarter, and oats at 1s. 8d., the quantity of corn he had threshed would have amounted to rather more than £36 if thrashed by hand. The saving effected by the threshing-machine had therefore more than repaid the whole annual expense of the outlay; but in the cutting and steaming cattle food he had, as he thought, saved much more. With regard to the steaming of food there were various opinions. The experiments which had been tried seemed to prove that no advantage attended it in the case of grain or roots; and though it was admitted that the steaming of dry fodder enabled cattle to extract a larger portion of nutriment from a given quantity, yet it was doubted whether the cost of the process did not outweigh the advantage gained. He was of opinion that where the cost could be reduced to so insignificant a sum as by his method, the advantage was great. The effect of steaming was not to alter the nature of the food: it did not convert poor food into rich: its simple effect was to render mor nutritious part of the food digestibl bruising grain every particle was expose action of the juices of the stomach; an could break down the substance of ro green crops thoroughly with their teeth; dry fodder some part of the nutriment the action of the stomach, because th could not be thoroughly broken up by cation. By cutting fodder into short and steaming, it was rendered tender, made to resemble green food. By st both hay and straw might be made mor tious, and we might substitute a portion for hay, and still keep cattle doing as we dry hay alone. He thought it a great ad to consume a good part of the straw vender, provided you could do so, and y cattle in condition. The necessity of pastures to a large extent was thereby a it was unprofitable to exhaust pastures b ing them, and to repair the waste by The manure would be better employed arable land, and the pasture would yield profit by having its produce consumed ground. During the last winter he had of neat cattle and horses, and he fed them the whole time on steamed hay and stra had a simple apparatus for steaming to the boiler of his engine, by means o the chaff was steamed with great qu The coals for the work of the engine an steaming, each time cost 1s. He steamed 600 or 700 strikes twice a we the labour of two men for two hours w cient. The cost was not, therefore, m 4s. a week for steaming the food of 90 stock. Up to the 14th of February he his stock on one-third hay mixed with tw straw. After that time, finding his co low condition, he used half straw and h and gave the milking beasts a foddering morning and night. As they calved a pound of linseed to their steamed food this diet his cows grew fast and got into well as he ever remembered. Contra consumption of hay in this and form he calculated that he had saved 40 to he thought that if he had used 10 tons would have been better, and he ther down 30 tons as his saving. The d between the consuming price of 30 ton and the 30 tons of straw which sup place, reckoning hay at £3 13s., and £1 5s., would amount to £67 10s., expense of cutting and steaming amo less than £5. A very general opin expressed that it was more advantageous barley threshed by the flail: when thr machine the pile was cut off so clo

nuch less measure. Mr. Payne
thstanding the greater weight of
shed by machine, prefer barley
lail at 2s. per quarter more, for the
alting. Except for very extensive
s thought that the great outlay
wer, rendered it more expedient to
ie flail or horse-power machines,
idlord would be at the cost of erect-
sary buildings.

IGTON FARMERS' CLUB.

ithly meeting of this club, held
l ult., at the offices of Mr. Thos.
'eyor and agricultural engineer,
ary, the subject under discussion
*est method of making and securing
the best season of the year for ap-
ure to Grass Land.*" Henry
Esq., the chairman, introduced
s and read an interesting paper
m the pen of Mr. Davidson, a
respondent of the club. During
ion which ensued it seemed to
neral opinion of the members
t in fine sunny weather experi-
ready taught us nearly all that
to be done in making and se-
to advantage, but that under all
ces, even in the finest weather,
ble to keep the hay in such a
urity that in case of a change of
o material injury may be sus-
is also an important matter to
labour as much as possible, for
rpose the hay-making machine
sed to great advantage in dry

ficult or wet hay season it was
l best not to have too great a
f grass cut at one time, and to
grass when cut to remain in
r some days, should the weather
wet, occasionally turning the
but after the grass is spread it is
to have it put in small cocks, or
, as soon as possible, opening the
during the dry part of the follow-
but never to open *out more at* one time than can be put up again on the same day or before rain comes on, and increasing the size of the cocks as the hay becomes dry. The hay machine should be sparingly used in damp weather, the opinion being that it beats out the seeds of the hay too much, besides which the wheels of the machine running over the hay and pressing it upon the damp ground has an unfavourable tendency. When hay has got a good deal of weather in the winning, it was recommended to mix about a peck of salt with each ton of hay in the stacking, providing that it be stacked tolerably dry, as salt is known to improve hay that has been injured by the weather.

In reference to the best season of the year for applying manure to grass land; although some of the members present were of opinion that it was injudicious to apply manure to grass land at all, considering that it might be applied to greater advantage on the tillage, and by changing the grass land, and frequently pasturing, it might be kept in condition without manure; yet the majority were decidedly in favour of occasionally manuring grass land, beleiving that by judicious management it might occasionally be quite as profitably applied to grass land as to tillage. The unanimous opinion was that the best season for applying manure to grass land was immediately after the hay is taken off, that being the time when the manure can get free access to the roots of the grass, besides grass, when newly cut, grows rapidly, by which means the manure is soon covered over and the roots of the grass receive the full benefit thereof, whilst there is no danger of any part of the manure being washed away by the heavy rains of winter. But in cases where it is inconvenient to apply the manure after the hay is mown, then the next best time was believed to be in the spring, just when the grass is expected to begin growing; and probably in this climate the beginning, or the middle, of March might be suitable.

The subject fixed for discussion at the next monthly meeting, on the 19th August, is "*The best time for reaping Wheat and other Corn; with the best and most profitable mode of cutting and securing it.*"

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AGRICULTURAL CHEMISTRY ASSOCIATION.

From a report of the committee of the above association, we learn that following the two leading principles on which the Society was founded, namely, the diffusion of existing knowledge as to the application of chemistry to agriculture, and the enlargement of that knowledge, the committee will notice, first, what has been done in the way of lectures and other methods of affording information; and, secondly, what has been done by analytic investigations in the laboratory for the guidance of agriculturists and the advancement of the science. 1. It may be remembered that the committee in January last announced, that by way of an opening to the business of the association, Prof. Johnston had, at the solicitation of a number of leading agriculturists in the neighbourhood of Edinburgh, agreed to give three lectures on subjects of general interest. These lectures were accordingly given, and by the numerous assemblages of both landlords and tenants which they produced, proved the deep interest taken in the objects of this institution, as well as the eminent qualifications of Professor Johnston for the duties of the office he had undertaken. These lectures in Edinburgh were, after a short interval, followed by invitations from various local agricultural societies throughout the country to Professor Johnston to deliver similar lectures at the great towns with which they were connected. The subjects of lecture were the General Theory of Manures—Food of Plants—Uses of Manures—Mode of applying them—Methods of improving the Soil—the Benefit of Draining—the Use of Lime—the Qualities and Use of Guano—and the Feeding of Stock. The committee cannot doubt that one result of these visits by Professor Johnston to different districts was to stimulate and extend the desire among both proprietors and tenants for information on the subject of scientific agriculture. Within the last 12 months no less than seven or eight periodicals have been started in Scotland, and three of them within the last three months, exclusively devoted to the diffusion of information on the subject of Agricultural Chemistry and its practical uses. Farther, it deserves to be mentioned, that several of the parochial schoolmasters in the west of Scotland, *perceiving the wishes of* the farmers, that their children should imbibe some knowledge on these subjects, and at all events a taste for them, for which one lesson in the week might suffice, prevailed on Professor Johnston to compose a little treatise of a popular nature for their use; and one of them has recently applied to him to learn whether during the vacation of his school he may be permitted to attend the laboratory in Edinburgh, with the view of making himself more familiar with the science. That this is not to be traced to any fanciful idea of his own, is clear from the fact that the farmers of his neighbourhood have agreed to raise a sum of money among themselves to defray his expenses. If either this year, or in a future year, a sufficient number of such applications were made, the committee are happy to announce that Professor Johnston would be willing to give a gratuitous course of lectures to schoolmasters during three weeks of their autumn vacation. 2. The committee have the satisfaction of stating that the advantage of knowing something of the chemical nature of soils, manures, and other substances connected with farming operations is now becoming universally acknowledged and acted on; in proof of which it is enough to mention that during the last six months no less than 242 analyses, of one kind or another, have been performed by professor Johnston and his assistants—being on an average more than one-and-a-half for every lawful day. When the delicate nature of many of these analyses is considered—some of them requiring many days for their performance, it will be acknowledged that in this department a very large amount of work has been accomplished. The subjects of these 242 analyses were as follow:—Soils, 90; Guano, 77; Waters, 25; Ashes of Plants, 14; Marls, 9; Miscellaneous, 27. The committee may here refer to some of the cases of analyses made in the laboratorary, in order to point out to persons who are not members of the association the practical benefits derived from such information. They will give some instances under different heads:—1. As to analysis of soils. Mr. F., a proprietor in the west of Scotland, having sent some samples of soils from his estate for examination, wrote as follows to Professor Johnston, after receiving the analysis:—"From your analysis of my soils it appears that they are deficient in magnesia and the phosphates, which accounts fully for the very beneficial effects of both these substances when applied to my soils as a manure. It is a striking instance of the good that may be obtained from accurate analysis, showing that time may be saved by minute attention to its indications, and that the total failure of a crop may be prevented." 2. As to the analysis of guano. Three several kinds of artificial guano, well

n the market under different names,
ng at as high a rate as natural guano,
ring the last six months sent to the
y by members of the association, that
ricultural value might be determined.
case it was found that the prices charged
n one-third to one-half above the real
the compound, and that in truth it
better to spend the sum proposed to
ut on these mixtures in buying natural
It is hardly necessary to add that the
given was very readily followed. But
er must be on his guard against adul-
, even in what is sold as natural guano;
recently a large quantity of a manure
o be genuine guano, was sent down to
s for sale there, by one of the most
le houses in London, which on exami-
as found to contain 75 per cent. of chalk,
ave been coloured by spent bark ground
powder. The committee may farther
under this head that a chemical manu-
in Leith had a quantity of waste refuse,
d of no value, and which had accumu-
his premises—to the extent of about
—when it occurred to him to send a
f it for analysis to Professor Johnston.
l that it contained substances extremely
as a manure, and recommended that
d be sold as such, at the rate of £3
The result of this discovery has
may be supposed, eminently benefi-
only to the manufacturer, but to the
and in so far to the country at large.
rs, from some researches that the ash
varies much more in composition ac-
to the soil and manure in which they
rn, than has hitherto been supposed,
more is really within the power of the
armer, in the way of modifying the
of the vegetable food he raises, than
these researches could have been ex-
In Mr. Johnston's Report, lately dis-
among the members of the Associa-
ntion was made of the composition of
raised with guano and with farm-yard
; some experiments recently made with
e turnips, under the direction of Lord
e, have shown that they not only differ
osition, but have very different feeding
es, thus showing the connection between
ure employed and the value of the food

e meeting it was stated by Mr. Milne,
e farmer expended £150 a year on
manures; and he (Mr. M.) held in his
note of the sums expended on an aver-
ear for manures, as follows:—Bone-dust
5; rape-cake and rape-seed, £169,331;
being the amount imported, *not for the* country at large, but to Liverpool alone, in one year), £59,240; being a total of upwards of £320,000. These were the sums expended in manures; and if they were to believe the accounts in the newspapers, which stated that 300 vessels are to be sent to bring home guano, they would soon have an expenditure by the farmers of several millions for this article alone.

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OUR TABLE.

We have made arrangements with Mr. Wm. BRITTAIN, *Agricultural Commission Agent, 24, North John Street, Liverpool, whose advertisement will be found in another column, by which we shall be enabled in future to give a correct list of the prices of produce in the great markets of Manchester and Liverpool; we shall, by this means, reply to our correspondents who make enquiries on the subject. At the same time we must be permitted to state that having long known Mr. W. B., and placing great reliance upon his judgment and integrity, we consider ourselves but as performing an act of duty in recommending him to our readers.*

M. SAUL.—*We give the preference to writers who forwnrd us original communications. Those which have already appeared in other periodicals are of comparatively little value. We are obliged however by your offer, and shall be glad to make the arrangement you propose, subject to the foregoing remarks. We will endeavour to notice your turnip-sower next month.*

MR. MECHI *has our thanks for his communications, plans, &c., which we will notice next month.*

A SUBSCRIBER.—*Our correspondent is in error when he supposes we recommend potatoe tops as* winter *food for cattle; it was as summer food we suggested their use. We shall best answer our correspondent's enquiry by stating our own practice. In the first place, be it understood, we graze none, in the common acceptation of that term, except during a short period in the autumn, and except also young stock. Our aftergrass is, of course, eaten off, but during summer all the food is mown; an outlet is provided for young stock, more for the sake of exercise for them than for food, and their principal feed is cut, as in the case of all other stock, and given them in sheds provided as near the mowing ground as possible. As a general rule, but more particularly when the season is dry and grass scarce, the tops of the potatoe crops are carefully collected as they are raised for market and carted to the shed, where they are cut with straw, and given, not entirely as a substitute for grass, but in aid of it. They are readily consumed in this way by horses as well as cattle, and it is to the adoption of this plan* during a period *of* last year, *extending from the time when the second sort of early potatoes came in, quite up to the period at which the frost set in and stopped the supply, that we owe a stock of last year's hay equal to next winter's consumption.*

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Fairs in North Wales in August.—*Anglesea.*—Aberffraw 15, Amlwch 12, Bodedeyrn 16, Llanerchymedd 14, Llangefui 17, Menai Bridge 18.—*Carnarvon.*—Aberdaron 12, Cae-braich-y-cafn (settling day) 12, Bettws-Garmon 11, Beddgelert 10, Carnarvon 12, Conway 19, Dôl-benman 26, Llanllyfui 11, Menai Bridge 18, Pen-morfa, Pen-machno 14, Pwllhely 13, Tal-y'-bont 11, Tre'-Maddock 20, Ty'n-y-Maes 27.—*Denbigh.*—Abergeley 20, Derwen 15, Bryn-Eglwys-yn-Iâl 3, Cerrig-y-Druidion, Eglwys Fâch 24, Gresford 26, Llandegfal-yn-Iâl 4, Llangollen 21, Llansannan 17, 27, Llangwrn 11, Llanarmon-dyffryn-Ceiriog 13, Llanrwst 10, Llansant-ffraid-glan-Conway 1, Pentre'n-Foelas 11, Ruthin 8, Wrexham 7, Y maen 12, Yspytty Evan 13.—*Flint.*—Cae'r-Gwrley 12, Caerwys 29, St. Asaph 18, Owrtin 9, Mold 2.—*Merioneth.*—Aberdyfi 6, Bettws 12, Corwen 19, Cynwyd 6, Dolgelley 8, Ffestiniog 15, Gwyddelwern 5, Harlech 16, Llandderfel 17, Llandrillo 28, Maentwrog 15, Pen-ystryd, Trawsfynydd 17, Trawsfynydd 14.

Fairs in August.—Broughton-in-Furness, Uttoxeter, Uxbridge 1, Northwich, Whitchurch, Newark, Bridgenorth 2, Thirsk, Daventry 3, Altrincham, Middlewich, Shiffnal, Wattlesbury, Abingdon, Louth 5, Ilsley, Trowbridge 6, Devizes 7, Shepton Mallet 8, Rye, Snaith 10, Lancaster, Newton 12, Banbury, New Radnor 14, Oswestry, Worcester, Hornbury 15, Thetford, Ashborne 16, Dorrington 17, Chorley 20, Ludlow, Horncastle 21, Ipswich, Marlborough 22, Wainfleet, Witney 23, Tarporley, Chipping, Prescot 24, Preston, Ellesmere 26, Coventry, Newport Pagnel 27, Newcastle 28, Watford, Uckfield 29, Blagdon, Spalding 30, Wick 31.

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MEETING FOR THE PURPOSE OF ESTABLISHING AN AGRICULTURAL COLLEGE.

A public meeting for the above purpose was held at the Freemasons' Hall, Southampton, on the 24th ult. Among the parties present were the Duke of Richmond, Lord Ducie, Mr Pusey, M.P., Mr. Estcourt, M. P. (Oxford), Professor Playfair, Dr. Buckland, Dr. Daubeny, &c.

The chair was taken by Mr. Pusey, who briefly stated the object of the meeting, and *pointed out the advantage* that would accrue to the agriculturists from the establishing such a college. The project had been taken up by many of the leading agriculturists, not only in the immediate district in which it was intended to establish the college, but in other and distant counties. Lord Bathurst had, in addition to providing a suitable farm of 400 acres on which the college and other buildings were to be erected, advanced £2000 in furtherance of the object.

The Duke of Richmond, in proposing the first resolution, said that he appeared before them as a country gentleman, anxious to promote an object so laudable and so beneficial to the agriculturists of the kingdom. They must all regret that their early education had not given them the advantage of the knowledge of chemistry as practically adapted to agricultural purposes. He had declined to take shares in that society, upon the principle that every shareholder should have time to attend to the details of the society to which he put his name, so that by so doing he might not mislead others to add their names upon the faith of seeing his name and thereby supposing he would attend to its practical operations. He would avoid that evil as he was aware that his many other avocations would prevent him from giving sufficient attention to the details. He, however, so highly approved of the society, that, although he could not become a subscriber, for the reasons he had stated, yet he most gladly gave a donation to promote its establishment. He would not have the committee be too sanguine of making any profit from the farm. He was a farmer himself, and he was aware that farming was not so prosperous as most other pursuits. He was of opinion that schools of agriculture were much wanted in the country, and he had great pleasure in proposing the first resolution, which was seconded by Dr. Playfair:—"That schools of agriculture are much wanted in this country, in which a knowledge of the sciences now admitted to be essential to the successful pursuit of agriculture may be learned in connection with the practical working of a farm on the most approved principles."

Mr. Estcourt proposed the second resolution, and said that he gladly availed himself of joining in a meeting that had so important an object in view. He in common with many other persons had long deplored the want of a proper establishment for the education of the agricultural population in pursuits adapted to their after life. A most important fact was developed and published by the agriculturists themselves, as the wish to establish a college originated from a farmers' club. The object of the meeting had his most cordial support, and he moved the following resolution, which was seconded by Mr. N. Goddard:—"That the plan for the establishment of an agricultural college near Cirencester, explained by the deputies attending this meeting, is calculated to effect the desirable object."

The next resolution was proposed by Dr. Buckland and seconded by Mr. Eyle:—"That this meeting warmly recommends the agricultural community to give every support and encouragement to the establishment of this college; which they regard as the first step in the right direction for training up the rising generation of farmers upon a sound foundation; and they would especially urge on farmers generally the importance of securing to their children intended for the same occupation the great advantages to be derived from the kind of education provided by such an institution."

Mr. Pusey congratulated the meeting upon the object they had in contemplation being fully carried out, when they saw the noblemen present, and the member for the University of Oxford, as well as two of its distinguished professors, come forward and take them by the hand.

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PRINCIPLES OF BREEDING.

At the sixth agricultural meeting in Albany last winter, the subject for discussion was the proper mode of improving the breed of domestic animals. Mr. Howard made, substantially, the following observations:—

It seems to be admitted by most persons, that domestic animals have, in some cases, been improved by man, and the object, in the outset, is to ascertain how that improvement has been effected: because, "what man has done, man can do." What then, has been the system pursued by the improvers of animals? Some natural principle has doubtless been acted on. In the history which has been given of the management of Bakewell, Fowler, Colling, and others, we are not informed that the constitutional qualities of their animals were changed or improved, by keeping them on any peculiar kinds of food. They, to be sure, had their animals well fed with wholesome food, adapted to their age, but no particular mode of feeding was relied on to effect a constitutional improvement.—Nor was it supposed that those men had a very thorough knowledge of the physiological principles which had just been spoken of. In saying this, it was not intended to undervalue science, but simply to state, that with such light only as is within the reach of every man, important improvements have been made. If to the practical habits of observation which those celebrated stock-breeders possessed, had been added a thorough knowledge of anatomy and animal physiology, the result of their labours might have been still greater. But practical knowledge and discrimination, are of the first consequence, and with the men who possess these requisites, theoretical knowledge will be turned to the best account.

An attempt will be made to state briefly, what is believed to be the foundation on which Bakewell, and other improvers of stock, conducted, or continued to conduct their operations.

The best domestic animals for any particular purpose, are seen to possess certain natural or constitutional characteristics.

It may be said to be a law of nature applicable to the animal and vegetable world, that "like produces like." This, though a truth in a general sense, is not strictly so in a particular sense; if it were, all animals of the same general family or race, would be exactly alike. For an illustration of this idea, suppose we take a given number of animals of any species, breed them together, and rear their progeny. We do not find an exact resemblance among them, nor do they exactly resemble either of the parents, or any of their progenitors. Some of the offspring may not possess as many good points as their progenitors had, and occasionally some may be found with more. There is a variation, but still there is a general resemblance. Now, if we select from the offspring of our first named animals, some of which are actually better than their progenitors, and breed from them, always bestowing proper attention, we may have some among their progeny also, which will exhibit the same superiority over the parents that was mentioned in the first instance. If we select the best from these again, and go on as before, we obtain the same results—we may still have a few superior ones—and thus by attending for many generations to these rules in selecting, a general, fixed, and permanent improvement is effected.

But it should not be supposed that the superiority of offspring to parents, which has been spoken of, is frequently to be expected; on the contrary, such superiority is rare, especially in those breeds which have derived their excellence chiefly from the art of man—in such cases a progeny is more likely to be inferior to its progenitors, than superior—nevertheless, that superiority is sometimes found; and experience has proved that if such animals as possess it are chosen for propagation, those superior points, though in their first development they may seem to have been only an accidental deviation from general laws, may be perpetuated in the future progeny—may be transfused through a larger number of animals, and other improvements added in succeeding generations.

The principle then is this—that *like begets like* in a *general* sense—that there are some variations within this rule, which, when seized on, constitute the basis, under proper management, of new and improved varieties. That particular qualities in animals, though apparently accidental at first, may become fixed and hereditary, (coming under the general principle that like begets like,) by the exercise of care and skill in selection and breeding.

It is by having acted on this principle, that improvement in breeding domestic animals has been chiefly effected.

But it is impossible to lay down rules for selecting and breeding, so minutely that they will infallibly lead every one who undertakes to follow them, to the desired point of improvement. To be able to select the best animals for particular purposes, requires a nicety of discrimination which can only be acquired by a long course of the closest observation, and a habit of comparing different animals, united with a natural taste for the subject and a thorough understanding of its principles. Such is the attention, study and very careful observation, that is necessary to constitute a successful breeder, that few men have *hitherto* been able to secure that title, and *until men are much altered*, it will continue to be so in future. It is an easy matter to improve an inferior stock by crossing it with a superior one; but when there is no longer a superior stock to resort to for crossing, there will be found but few who will be able to push improvement any further. And this will always render the number of *truly fine* animals comparatively small, and as a natural consequence, the prices they will command, will be comparatively high.

It is believed that the principle here laid down, is the one which has been acted on in breeding, whether improvement has been sought by crossing distinct breeds and rearing a new one from the issue, or by breeding entirely from one variety. It is this principle which constituted the basis of the improvements effected in the Long Horn cattle by Bakewell and Fowler, in the Short Horns by Colling and his coadjutors, in the Herefords by Price, Tompkins and others. It has also been equally the basis of improvement in sheep-breeding, from the Leicesters ef Bakewell down to the South Downs of Ellman and Webb, and the Anglo Merinoes of Lord Western. Proper selection is the grand point, and, with a sufficient range for this, with the due care in feeding, &c., in proportion to the skill and judgment of the breeder in discovering the excellencies and defects of animals for particular purposes, so will be his success in attaining the points of improvement at which he aims. Every thing depends on the faculty of the breeder to select those animals for propagation which are best calculated to promote his object.

It may not be improper to make a remark here in relation to certain modes of breeding, in reference to which much has been said and written.

Breeding from animals of near relationship, commonly called in and in breeding, is generally considered injudicious. On the other hand, crossing two distinct races, whose characteristics present a wide contrast, is by some considered equally impolitic.

Breeding directly in and in, or from precisely the same blood, is not, probably, often practised by professional breeders. It is usually admitted that Bakewell practised very close breeding, if, indeed, he did not breed from precisely the same blood, with both cattle and sheep. And yet his stock not only improved in symmetry and tendency to fatten, but in constitution also.* It is true that after his death the stock declined, but under the guidance of his master mind, no degeneracy was indicated. He made such selections of animals for breeders, in the beginning, as suited his judgment, but afterwards confined himself to his own stock; but it has been observed that his stock was large as to furnish unusual facilities.

Crossing long-wooled with short-wooled sheep, and breeding from the issue, is commonly considered injudicious, and in general the plan does not succeed, yet examples may be cited to show that great success has sometimes followed its adoption.

Mr. Twynam, of the county of Hants, Eng., has for twelve or fourteen years been engaged in breeding a race of sheep from an original cross of the Cotswold and South Down. His sheep sustain a very high character, and he has carried many prizes on them. Count de Gourcy, in the account of his late tour through England and Scotland, speaks of them in the highest terms, both those which he saw in the possession of Mr. Twynam, and of the same stock which he saw on the pattern farm of Lord Ducie, under the direction of Mr. Morton. The Count states that Mr. Twynam, has for a few years past, sold many of his sheep to be sent to Australia, India, &c.†

Another striking example is that of the Anglo Merino sheep of Lord Western. He commenced his experiments about the year 1812, with some sheep presented him by George III., which that monarch received from Spain. The peculiar race to which he has given the name of Anglo Merino, were produced by a cross of the Spanish with the English long-woolled sheep—the object of Lord Western being, as he has declared, the production of a Merino fleece on a Leicester carcass. His first crosses were with the Leicesters, and afterwards with the cotswolds and the Kent long-woolled sheep. His success, up to this time, has been very satisfactory. He has obtained a carcass weighing at two years old from a hundred and twenty to a hundred and thirty-five pounds nett selling at a high price to the butchers, and has obtained at the same time a fleece averaging nearly six pounds of washed wool, commanding a price in market nearly equal to full blood Merino. His flock of breeding ewes, of the cross-bred stock, is about eighty in number

It is not now intended to recommend these modes of breeding, but to show from these examples (and others might be given) that men who thoroughly understand the business, with a sufficient range for selection, may effect improvement by either of them. But the breeder must not be confined to too small a number of animals—he should have so many to choose from that there may be an opportunity of obtaining the points he wishes for, without concomitant defects. Range for selection is very important, and much disappointment has frequently been experienced from inattention to this particular. Some seem to have an idea that to obtain a superior stock it is only necessary to procure a single pair of animals of the breed desired, and leave them to an indiscriminate copulation. The expectations of farmers are often highly raised from the circum stance of a few improved animals being brought into the neighbourhood, and it appears to be supposed that in the course of a few generations their whole stock will possess the blood and perfections of the new breed. These expectations are seldom realized. From the limited chance for selection, animals having the same defects are permitted to breed together, and the consequence is that these defects become more and more conspicuous with every generation, so long as the injudicious course is followed the stock degenerates and dwindles away to worthlessness, perhaps, even before the sanguine, but dull-sighted owner is aware of it. This consequence may perhaps follow sooner where stock is bred from close affinities of blood, but if the selection of breeders is confined to the progeny of only two or three animals, it is almost impossible to avoid degeneracy.

It is often remarked that high bred animals, as they are called, (or perhaps we should say high-bred fattening animals,) do not breed readily. In animals of this character, a sort of artificial temperament or constitution seems to take place—a change somewhat analogous to that which not unfrequently occurs in plants. An extraordinary developmemt of one class of organs is frequently attended with a greater or less defect in other organs. Strawberries and other fruits, of a size much greater than is common with the species, are sometimes produced. But they are generally much less prolific than other kinds which show extraordinary departure from the original or natural characteristics of the race. The flowers of some plants by cultivation become double. In this case, the stamens, or one portion of the procreative organs, are converted into petals—the plants become monsters; and are either totally barren or produce only a small quantity of imperfect seed. So with certain animals, cultivation has partially changed their constitution—their procreative faculties are weakened—the energies of the organs of generation become as it were swallowed up by the fat secreting organs—and the animal is either incapable of propagation, or begets only a feeble progeny.*

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* "The principle which he [Bakewell] invariably adopted was, to select the best beast that would weigh most in the valuable joints; so that while he gained in point of shape, he also acquired a more hardy breed, and especially by attending to the kindliness of their skins. he became possessed of a race, which was more easily fed and fattened than any other."—[Complete razier, p. 34.]

†The Mark Lane Express of May 13th last, gives an account of a show of animals which had just been held i England, at which Mr. Twynam carried the prize for e "best ram of any kind, breed *or age.*"

The skilful breeder will be always on his guard against this defect, or *monstrosity*—he will take care that no one property is cultivated to the sacrifice or injury of any other essential one—he will not encourage the fat-forming organs to such a degree that the generating organs of his animals become weakened, and consequently, the constitutions of their offspring impaired.—Vigorous and energetic animals should always be chosen for propagation—and the ultimate success of those breeders will be greatest, who pay due regard to the proper balance of the animal system.

In reply to an inquiry by Professor Emmons, "which of the parents has the most influence on the progeny?" Mr. Howard said—that was a question on which even "doctors disagree." Some few years ago, the Rev. Henry Berry, of England, wrote a prize essay on this very question, and the ground he took was, that where both parents are equal in strength or purity of blood, the influence of each on the progeny is equal.

It is, however, reasonable to suppose, that in some respects this influence of the parents cannot be equal; and that the theory is well founded, that the constitutional qualities, nervous temperament, &c. are more likely to resemble the dam, and the external qualities, such as outward form, colour, hair, &c., to resemble the sire. Many examples might be cited in support of this theory. Many farmers have noticed how much more likely their animals are to inherit the diseases dams than their sires. When we that the animal is supported du fœtal stage of its existence entirely blood of the mother, and that thi circulating through every part of tem, would, of course, be affecte state of the animals health, thi quence would seem to be perfe tural.

On the other hand, it has beer that the outward features of the si frequently than those of the dam, stamped on those of the progen has been attributed to the nervo ence of the dam—or what is calle fluence of the imagination of the the fœtus. Practical men believe something in this. Professional avail themselves of the principle i to their animals some desired n qualities. It must have been so akin to this, by the influence o through the medium of peeled rod caused to be born "ringed, streak speckled." Breeders of horses so take great pains to operate on the i tion of the mare, and thus produc foal certain characteristics. At the conception, or within the first mon wards, the fœtus seems to be part susceptible to this influence, and i difficult to produce the changes sp Some striking instances of the effec sympathetic influence, might be One of the most remarkable, perl showing the evidence of anterior ment, is that of a mare, seven-ei Arabian blood, after having pro foal by a stallion quagga, (a sp zebra) continued, after a lapse of fiv to produce the markings of that an three successive births, although of all the subsequent progeny thorough bred Arab horse. This is authenticated fact, and correct por the mare, the hybrid, and the thr which the mare afterwards had horse, the latter showing the stripe quagga, are preserved.*

The influence of one black sheep, it may never have any progeny, noticed in causing black lambs. Sh who have kept black dogs with thei have observed the same effect. T vous influence of animals in a pregnancy, shows itself very conspi in the effects of fright on the of

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*Barrenness of females seems in some cases to result from excessive venereal excitement. Cases of this kind *are entirely distinct*, and are the result of a different *cause from the imbecility* here alluded to.

*See Naturalist's Library, Mammalia, vol.

METEOROLOGICAL & RURAL OBSERVATIONS.—WINWICK, JULY, 1844.

The weather during the past month has been agreeably diversified with shower and sunshine; generally rich, glorious and hot; and, as the season advances, euerything betokens an early harvest. The pastures have gradually thrown off the brown and bare, for that of a more lively and pleasing hue, watery pressure having at length perforated their parched surfaces, previously as hard as macadamized roads. Hay harvest is well nigh over in these parts, and the marketing of early potatoes has generally commenced. These do not prove more than one half of an average crop. The later varieties are improving much in their appearance, and will probably yet turn up well.

The wheat crop is generally luxuriant, beautifully eared, and filling fast in common with oats and barley.

CALENDAR.

June 25. Wheat (triticum hybernum) in bloom
July 8. Meadow sweet (spiraca ulmaria) ditto
July 8. Bell-flower (campanula rotundifolia) in bloom

ATMOSPHERICAL OBSERVATIONS, FROM JUNE 21st to JULY 20th, 1844.

WEATHER.	A. M.	P. M.	Even.	Days.	PREVAILING WINDS. N.	N.E	E.	S.E.	S.	S.W	W	N W	Total.
Clear	2	2	4	1	3	0	0	0	0	0	2	3	8
Fine	16	22	20	17	5	6	3	3	0	4	17	20	58
Fair, cloudy..............	3	2	2	1	1	1	1	0	0	0	0	4	7
Rain	9	4	4	11	0	0	3	0	3	0	9	2	17
Total	30	30	30	30	9	7	7	3	3	4	28	29	90

Sun shown out A.M. 26; P.M. 26; days 28.

FORCE OF WINDS.

FORCE.	N	N.E	E	S.E.	S.	S.W	W.	N.W	Total.
	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob
1 Calm, or gentle breeze	7	1	2	3	0	2	8	17	40
2 Moderate wind	2	6	5	0	3	2	16	12	46
3 Fresh breeze	0	0	0	0	0	0	3	0	3
4 Strong wind	0	0	0	0	0	0	1	0	1
Mean Force	1·2	1·9	1·7	1·0	2·0	1 5	1·9	1 4	1·61

FALL OF RAIN.

	Days.	Depth. in. dec.
From June 21st to 30th	1	1·20
„ July 1st to 10th	3	0 24
„ „ 11th to 20th	7	5·10
Total	11	3·54

ATMOSPHERIC PRESSURE.

	Max.	Min.	Mean.	Max.	Min.
	in.	in.	in.		July 14
Atmos. pres..	30·15	29 90	2980625	July,	Jn20,22
Diurnal varia	0·60	0·00	0·11900	20, 13.	July 2.

Utmost range or greatest variation .. in. 0·95

TEMPERATURE.

	Max.	Min.	Mean.	Max.	Min.
	o	o	o		
Max. or Solar Tem	89·00	60 00	71·80	June 23	July 14
Min. or Lunar do.	53·00	38·00	46·00	July 11	June28,30
Mean: Diurnal do.	68·50	54·25	58·833	June 23	July 17, 4
Diurnal variation.	41·00	10 00	26·100	„ 23	18, 14

Utmost range or greatest variation....... 51

Winwick, July 27th, 1844

EDWARD ROTHWELL.

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ROYAL AGRICULTURAL SOCIETY.

ANNUAL MEETING AND EXHIBITION.

The annual country meeting and exhibition of this society was held at Southampton last week. On Wednesday the judges of stock made up their report. On that day too His Royal Highness the Duke of Cambridge arrived at Southampton and visited the show yard. The exhibition was upon the whole a good one. Thirty thousand persons are said to have visited the show yards on Thursday the 25th ult. There ppears to have been but little difference of pinion as to the general correctness of the udges' decisions, although *in the particular* case of the best cow, in milk, an opinion prevailed that Mr. Forrest's four-year-old short-horned cow was a better animal than that of Mr. Booth, which won the prize. Mr. Forrest can, however, very well bear to be beaten once: so successful a breeder as he has proved himself may be well content with the reflection of his former victories, and the assurance that if not better than the winning animal, his cow is in every respect as good. The following is a summary of the animals exhibited in the various classes:—

Short horned bulls, 39; cows in milk, 10; in-calf heifers, 4; and yearling heifers, 13.

Herefords—Bulls, 13; cows in milk, 5; in-calf heifers, not exceeding 3 years old, 6; yearling heifers, 9. Devons—Bulls, 10; cows in milk, 6; in-calf heifers, not exceeding three years old, 3; yearling heifers, 4. Cattle of any breed, or cross—Bulls, 14; cows in milk, 8; in-calf heifers, 7; yearling heifers, 5. Cattle of the Channel Islands breed, 12; cows in milk, 7; in-calf heifer, 1; yearling heifers, 3. Horses—Stallions for agricultural purposes, 13; two-year-olds, 7; cart mares and foals, 7; two-year-old fillies, 3; thorough-bred stallions, 8. Leicesters—Shearling rams, 42; shearling ewes, 5. Southdowns, 87. Long-wooled sheep, ewes, and rams, not qualified to compete as Leicesters—Shearling rams, 13; rams of any age, above two years, 9; shearling ewes, 6. Short-woolled sheep, not qualified as Southdowns—Shearling rams, 33; shearling ewes, 12. Pigs—Boars of a large breed, 8; boars of a small breed, 25; sows of a large breed, 4; sows of a small breed, 16; pens of breeding sows, 11. Extra stock—Cows, 3; heifers, 7; bull calves, 2; heifer calves, 2; oxen 6; shearling rams, 7; aged rams, 15; shearling ewes, 5; aged ewes, 10; shearling wethers, 7; red lambs, 10; horses, 6. Pigs—Boars, 3; sows, 3. The total number of lots was 375.

At the dinner of the council, the noble chairman read the following award of prizes:—

CATTLE.—SHORT HORNS.

Mr John Cooper, of Benkwood, the owner of the best bull calved previously to the 1st of Jan. 1842—30 sovs.

Mr Hayter, M.P., the owner of the second best bull—15 sovereigns.

Mr W. Foulds, of Kirklington, Nottinghamshire, the owner of the best bull calved since the 1st of January, 1842, and more than one year old—20 sovereigns.

Mr. John Booth, of Catterick, Yorkshire, the owner of the best cow in milk—15 sovereigns.

The Duke of Devonshire, the owner of the best in-calf heifer, not exceeding three years old—15 sovereigns.

Mr R. Booth, of Wallerby, near North Allerton, the owner of the best yearling heifer—10 sovereigns.

The judges highly commend Mr. John Forrest's 4 yrs 2 months 25 days old short-horned cow; also, Mr. John Booth's two years and a half old short-horned in-calf heifer.

HEREFORDS.

Mr W. Perry, of Monkland, the owner of the best bull calved previously to the 1st Jan., 1842—30 sovereigns.

Mr. G. Brown, of Avebury, the owner of the second best ditto—15 sovereigns.

Mr. J. N. Carpenter, of Eardisland, near Leominster, the owner of the best bull calved since the 1st of Jan., 1842, and more than one year old—20 sovereigns.

Mr. George Drake of East Tytherly, the owner of the best cow in milk—15 sovereigns.

Mr. J. N. Carpenter, of Eardisland, the owner of the best in-calf heifer, not exceeding 3 yrs old—15 sovereigns.

Mr. John Walker, of Burton, near Worcester, the owner of the best yearling heifer—10 sovereigns.

The judges highly commend Mr. Hobb's 2 years, 4 months, 3 weeks, 2 days old Hereford Bull.

DEVONS.

Mr. G. Turner, of Barton, near Exeter, the owner of the best bull calved previously to the 1st of January, 1842—30 sovereigns

Mr T. Newcombe, of Hopcott, Minehead, the owner of the second best ditto—15 sovereigns.

Mr. Thos. Reynolds, of Raddon Court, Exeter, the owner of the best bull, calved since the 1st of January, 1842, and more than one year old—20 sovereigns.

Mr. G. Turner, of Barton, near Exeter, the owner of the best cow in milk—15 sovereigns.

Mr. G. Turner, the owner of the best in-calf heifer, not exceeding 3 years old—15 sovereigns.

Mr. J. Hole, of Knowle, Somerset, the owner of the best yearling heifer.—10 sovereigns.

The judges highly commend Lord Portman's 5 years 2 months old Devon bull.

CATTLE OF THE CHANNEL ISLANDS.

Rev. Mr Phillips of Ealing, near Southampton, the owner of the best bull calved previously to the 1st of January, 1843—15 sovereigns.

Mr. W. Woolcock, of St. Peter's, Hants, the owner of the best bull calved since the 1st of January, 1843, and more than one year old.—10 sovereigns.

Mr. C. W. Robin, of St. Helier, Jersey, the owner of the best cow in milk.—10 sovereigns.

Mr. John Hume, of St. Helier's, Jersey, the owner of the best yearling heifer—7 sovereigns.

The judges highly commend Col. Le Couteur's 1 year 5 months old bull; also Mr W. B. Gater's two-year-old bull; and Mr. John Rougiers, 4 years old Jersey cow.

CATTLE OF ANY BREED OR CROP NOT QUALIFIED TO COMPETE IN THE FOREGOING CLASSES.

Mr. W Brine, of Tolpudd, near Dorchester, the owner of the best bull calved previously to the 1st Jan. 1842—30 sovereigns.

Mr T. Jenner, of Cowdrey Park Farm, near Petworth, the owner of the second best ditto—15 sovereigns.

Mr. Thos. Dowden, of Mitcheldever, Andover-road, the owner of the best bull calved since the 1st of Jan., 1842, and more than one year old—20 sovereigns.

Hon. M. W. Nugent, the owner of the best cow in milk—15 sovereigns.

Hon. M. W Nugent, the owner of the best in-calf heifer, not exceeding 3 years old—15 sovereigns.

Mr. W. J. Calhoun, of Banderton, near Chichester, the owner of the best yearling heifer—10 sovereigns.

SHEEP.—LEICESTERS.

Mr J. G. Watkins, of Woodfield Ombersley, Stourport, the owner of the best shearling ram—30 sovereigns.

Mr T. E. Pawlett, of Beeston, Beds, the owner of the second best ditto—15 sovereigns

Mr T. E. Pawlett, the owner of the best ram of any other age—30 sovereigns.

Mr T. E. Pawlett, the owner of the second best ditto—15 sovereigns.

Mr John C. Watkins, Woodfield, the owner of the best pen of 5 shearling ewes—10 sovereigns.

Mr John Beasley, of Chapel Brampton, near Northampton, the owner of the second best ditto—5 sovs.

LONG-WOOLLED SHEEP.

Mr C. Large, of Burford, Oxfordshire, the owner of the best shearling ram—30 sovs.

Mr Large the owner of the second best ditto—15 sovs.

Mr E. Handy, of Sevenhampton, Gloucestershire, the owner of the best ram of any other age—30 sovs.

Mr. E. Smith of Charlbury, the owner of the second best ditto—15 sovs.

SHORT WOOLLED SHEEP.

Mr Thomas Hutton, of Odeham, Hants, the owner of the best ram of any other age—20 sovs.

Mr W. Humfrey, of Chaddleworth Newbury, the owner of the best pen of five shearling ewes—10 sovs.

SOUTHDOWNS.

Mr Jonas Webb, of Cambridge, the owner of the best shearling ram—30 sovs.

The Duke of Richmond, the owner of the second best ditto—15 sovereigns.

Beaven, Market Lavingstone, the owner of the
f any other age—30 sovereigns.
ntham of Stoneham, near Lewes, the owner of
l best ditto—15 sovereigns
ke of Richmond, the owner of the best pen of
ing ewes—10 sovs.
id Barclay, M. P., the owner of the second
-5 sovs.

PIGS.

olonel Thornhill, of Lyndhurst, Hants, the
ie best boar of a large breed—10 sovs.
y, the owner of the second best ditto—5 sovs.
F. Hobbs, of Marks Hall, the owner of the
f a small breed—10 sovs.
. Goodlake, the owner of the second best
vs.
y, M.P., the owner of the best breeding sow
reed—10 sovs.
Falconer, of Christchurch, the owner of do.
reed—10 sovs.
use, of Warcham, Dorset, the owner of the
three breeding sow pigs of the same litter,
under 9 months old—10 sovs.

tra stock the judges awarded £10 to Mr C.
is 4 years old Oxfordshire ewe; also £7 to
dall, for his five years old cow of the Indian
cross; also £2 to Mr G. Drake, and £1 to
to Mr C. B. Northeast, for his Southdown
2 to ditto; and £4 to Mr W. Sainsbury —
s. £2 to Mr Hobbs, £2 to do. and £3 to do.
Mr Calhoun.

HORSES.

—*Stallions for Agricultural purposes*—First
to Mr. Thomas Catlin, of Butley, Wood-
folk, for a cart stallion, four years old, bred
—Second prize, 20*l.*, to the Right Hon. the
rmans, St. Germans, Cornwall, for an aged
.

—*Two-year-old Cart Stallions.*—A prize of
Right Hon. Lord St. John, of Melchbourne,
for a cart stallion, two years and two weeks
y his Lordship.

I.—Cart Mares and Foals.—First prize, 20*l.*
owle, of Market Lavington, Devizes, Wilts.,
are and foal. Sire of foal belonged to Mr.
nzlewood, Hants.—Second prize, 10*l.*, to Mr.
rts, of King's Walden, Hitchin, Herts., for
and foal. Mare bred by himself; sire of
d to Mr. Hayden, of Avrington, Cambridge.

—*Two-year-old Fillies.*—A prize of 10*l.* to
le, of Market Lavington, Devizes, for a two-
y, bred by Mr. R. Daintree. of Henningford
ar St. Ives, Huntingdonshire.

-*Thorough-bred Stallions.*—A prize of 30*l.*
urtis, of Basingstoke, for a thorough-bred
e years old, by Langar, dam by Cervantes,
anna by Selim.
ar-old thorough-bred stallion, by Sheet An-
Valencia, bred by Lord George Bentinck, was
y his Grace the Duke of Richmond, and
dmired.

lowing is the Award of Prizes for Im-

ghs.—To Messrs. J. R. and A. Ran-
swich, for their heavy land plough,
silver medal.—To Messrs. J. R. and
ome, Ipswich, for their light land
£10 and silver medal.—To Messrs. J.
Ransome, Ipswich, for Locock's
ugh.—To M. John Bruce, Stratford-
for his skim plough, £5.

ills.—To Mr. R. Garrett, Saxmund-
his drill for general purposes, £20 and silver medal.—To Mr. J. Smyth, Yoxford, for his turnip and manure drill, £10 and silver medal.

III. Scarifiers, &c.—To the Earl of Ducie, Dursley, for his cultivator, £10 and silver medal.—To Mr. D. Harkes, Knutsford, for his expanding horse-hoe, £5.—To Mr. Garrett, Saxmundham, for his patent horse-hoe, silver medal.—To Messrs. Saunders, Williams, and Taylor, Bedford, for their patent harrows, £5.

IV. Chaff-cutters, &c.—To the Earl of Ducie, Dursley, for his chaff-cutter, £10 and silver medal.—To Mr. Gardner, Banbury, for his turnip-cutter, £5.—To Mr. Hornsby, Grantham, for his cake-crusher, £5.

V. Sundries.—To Mr. D. Coombs, Barford, for his Oxfordshire waggon, £15 and silver medal.—To Mr. Stratton, Bristol, for his harvest-cart, silver medal.—To ditto, for his agricultural spring-cart, silver medal.—To the Earl of Ducie, Dursley, for his Richmond cart, silver medal.—To Mr. Staatton, Bristol, for his water-cart, £5.—To Mr. Crosskill, for his clod-crusher, £20.—To Mr. Hornsby, Grantham, for his drill-presser, £10 and silver medal.—To Mr. John Reid, Regent Circus, Piccadilly, for his subsoil pulveriser, £10.—To Mr. Cooch, Northampton, for his barley hummeller, silver medal.—To Mr. Stratton, Bristol, for Gingell's cheese-press, silver medal.—To Mr. Harkes, Knutsford, for his churn, silver medal.—To Messrs. J. Hall and Co., Cambridge, for Constable's trefoil and clover drawing machine, £5.—To Mr. J. Knight, Maidstone, for his patent hop-kiln, £5.—To Mr. Stratton, Bristol, for Fry's bone-breaker, £2.—To Mr. Deane. Birmingham, for his hand-mill, silver medal.—To Mr. Hill, Dudley, for his cow-crib, £2.—To Mr. Garrett, Saxmundham, for Springall's stack-stand, silver medal.—To Mr. Hill, Dudley, for his sheep-fence, silver medal.—To the Earl of Ducie, Dursley, for Clyburn's screw-spanner, silver medal.—To Mr. Pearce, Andover, for his back-band tug, silver medal.—To Messrs. Tasker and Fowle, for their machinery for drawing water, silver medal.—To Mr. J. Reid, Regent Circus, Piccadilly, for his Fire-engine, £5.—To Messrs. Ransome, Ipswich, for their Horse-works with bean-splitter, chaff-cutter, and linseed crusher, £30.—To Mr. Cambridge, Devizes, for his steam-engine £5.—To Messrs. Ransome, Ipswich, for their hand drain, tile, and pipe machine. £20 and silver medal.

We have not space for further remarks, or for the proceedings of the great dinner, but in another column we give the substance of what passed at a meeting for furthering the erection of an agricultural college. It does not appear to us to be taken up in the spirit we like to see exhibited upon questions of the great importance this undoubtedly is; and we fear the endeavours of the promoters will not ensure that success the measure deserves.

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Anglesea.—The drought has been, and indeed is still, very great in Anglesea, but not so fearful here neither as in England and some parts of Wales. The hay crops are extremely light all over the Island, so light in some parts, that the crops are not more than 2 cwt. per acre, but in some well sheltered places it is moderate. Barley and oats, too, are much under average as to straw, but the wheat is good. The potatoe crop is very poor throughout.

Guano.—It would appear by *Lloyd's List*, that not fewer than 1000 ships have sailed from various ports in Great Britain for guano. Thus, no sooner does a new avenue for trade present itself, than it is instantly glutted. From every small port in the kingdom vessels have been dispatched, which will arrive in spring, 1845.

Horticulture, &c.

Dahlias.—The best mode of dwarfing these is by pegging them down. It is not necessary to pinch off the flower buds in order to keep up a later bloom, as Dahlias in general flower well until they are cut off by frost.

Rhododendrons.—These may be grown in a chalky soil, provided pits are formed for them, and filled with leaf-mould. The holes should be tolerably wide, but need not be more than 18 inches deep. Mould composed of loam and leaves will do:—whatever leaves are used must be thoroughly decomposed, and if they can be mixed with one half peat so much the better.

Strawberries.—The best varieties for a market gardener, both with regard to quantity and quality, are Keen's Seedling and Myatt's British Queen. The former is an excellent forcer. The Elton Strawberry is a late sort, rather acid if not perfectly well ripened.

Peas.—In these improving times, when every man is expected to render his assistance in giving his mite of information, I beg to state the result of Early Peas as they have proved with me this season, hoping that it may be the means of eliciting from others the result of their experience, so
that no one may be tempted in any
be biassed by what I have myself pro
my satisfaction. Some years ago
since I have been in practice, it was th
early to have Peas fit for table by G
the Third's birthday (the fourth of J
since those days, in different parts
country, I have gathered Peas from
twenty-one days earlier. After a
dreary winter, every family seems t
for young Peas as soon as they possib
get them—no one finds fault on acco
their being brought too early to table
last November, having a south bor
late Cauliflowers cleared off, and put
place of protection for winter purpos
border was trenched and formed into
which were left rough and open to s
for Early Peas; having great faith
Early Warwick Pea for some years,
tion of the banks, was sown on the 1
December; the Peas were above g
on the 29th; in bloom, April 6th; st
that is, had their tops pinched off,
12th; and were gathered from on Ma
The height was 4 feet 6 inches, th
was heavy, and the pods well filled.
were mulched soon after the dry w
set in, which was the means of thei
tinuing to produce good Peas for
thirty days. The banks were 6 feet
Cormack's Prince Albert was sow
banks on the same border on the
January, 1844; they were up on the
in bloom on the 1st April; and we
thered entirely on May 14th. I coul
gathered a small dish on the 10th o
from them. This a very prolific an
flavoured Pea. On the same day, a
the same border, another portion
Warwick was sown. These, alt
having exactly the same treatment
two above sowings, with regard to
hoeing, earthing, sheltering, stickin
watering, stopping or topping, &
favour being shown either to one
other, were in bloom on the 13th of
and gathered on the 28th May. Alt
thus fairly treated, my old favouri
was fourteen days behind the
About thirteen years ago I compar
Warwick on a long south border w
veral others; of these Early Pea
Warwick proving itself then superior
others, retained my favour ever
Next year, should the Albert pro
same as it has done this year, I ca
call the Warwick a Pea for a second
Last year I sowed the two above P
the same day, under the same prepa

and management; the winter, however, was so mild, that they got too "gay," and were very much cut and crippled in the spring, but enough was left to fully prove the superior earliness of the Albert over the Warwick that time. With regard to Shilling's Grotto Pea I have not yet fairly proved its earliness. I sowed it this year to succeed others on an open quarter on the 4th of March. It was above ground on the 12th; in bloom on the 4th of May; and gathered on the 12th of June. Its height was 5 feet. It was not so prolific as the two above Peas. The pods with me were wide and rather short; but it was a fine-flavoured Pea, and of a beautiful colour when cooked. The writer finds advantage in sowing Early Peas in rows obliquely across the ground instead of in right lines, for the following reasons; first, they enjoy a greater portion of sun during the short days of winter and in spring; second, the earth lies dry, sweet, and wholesome; third, the banks break the wind from each other, so that the peas lie well sheltered, although the banks are so sloped that the rows of Peas have the full enjoyment of all the sun; the banks are 5 feet apart, height of back sloped 2 feet; sloping to the front, about 3 feet 6 inches; and the Peas are sown or transplanted 1 foot from the bottom. The above method is not only good for the Peas, but the border is so sweetened and pulverized by its being continually hoed, that the crop is sure to do well that succeeds the Peas.—*James Barnes, Bicton, Gard. Chron.*

Reviews, &c.

Daily Lesson Book, No IV. Hamilton, Adams, and Co.: Simpkin and Marshall, London.

This is an elementary school book which we notice for the purpose of expressing our thanks to the compilers for the introduction of the lessons on Animal and Vegetable Physiology aud Chemistry. Now that men of high scientific attainments have turned their attention to agriculture, with the view to aid its operations, by laying open to the operators the hitherto secret causes of those splendid and useful effects which agriculture is the means of developing — *that* science which has hitherto occupied but a mean rank amongst the useful attainments of man is taking (as it ought) a foremost place: any aid, therefore, to the student should be hailed, by every friend of agricultural advancement, as a preparatory step to those important changes which the proper education of our farmers will assuredly bring about. We welcome then the work before us most heartily, and bid its editors "God speed;" and that we may justify ourselves to our readers for calling their attention to this useful little book, we mark the following chapter on *Vegetable Physiology* for extract:—

STEMS AND SAP.

"The STEMS of plants are divided into two classes; those which grow internally, hence called *endogenous*, and those which grow externally called *exogenous*.

"The date, the palm, and the cocoa-nut tree, the sugar-cane, and most of the trees of tropical climates, belong to the endogenous plants. Their stems are cylindrical, being of the same thickness from the top to the bottom. Their mode of growth is this; a hollow stem shoots up to a certain height, and there stops; layer after layer grows in the interior of this hollow stem, till at length a period arrives when the outer coats are so hardened and distended, as to yield no longer; the stem has then attained its full growth in horizontal dimensions, and offers a broad, flat, circular surface to view, which has since scarcely risen above the level of the ground. In this stage it resembles the stump of a trunk of a tree which has been cut down.

"*Endogenous* plants have no real bark; the external coats of wood are so much hardened, as to render such a preservation unnecessary. When a European wood-cutter begins to fell a tree of this description, he is quite astonished at its hardness.

"The structure of the *exogenous* plants, to which the trees of our temperate climes belong, is much more complicated.

"The vegetation of the bark is precisely the inverse of that of the wood; that is to say, it is endogenous, its layers growing internally: the new, soft coat of bark, therefore, lies immediately in contact with the new, soft layer of wood. The outer coats of bark, when they become too hard to be farther distended by the pressure of the internal layers, crack, and becoming thus exposed to the injury of the weather fall off in pieces. It is this which produces the ruggedness of the bark in some trees.

"The SAP and PULP of plants, by which they are nourished, as animals are sustained, by means of blood, are produced by, and undergo very different changes from those of blood. There being no stomach in plants to digest food the soil seems to act the part of a stomach, and the tips of the roots which take up the sap, are so admirably constructed, that they only take up the sort of moisture adapted to constitute sap, namely rain water mingled with manure, or other nutritive materials in the soil.

"As there is no stomach in plants to digest the sap, no more is there any heart to circulate the same throughout the plant, and it is not well understood, even by the best informed botanists, in what manner this circulation is effected, unless it be that the sap rises through the tissue of the plant, particularly through the inner lays of the bark, and between the annual rings of the wood, in some similar way to that in which water spreads through blotting paper, or rises up through a piece of lump sugar.

"When the air is warm, and the sun shining on the leaf, a large portion of the sap is exhaled, and the sap which remains is consequently rendered thicker by this loss of its water; but so far from any of the darker-coloured substance, or carbonaceous matter being carried off, as it is from the blood in animal lungs, a portion of the carbon in the air is imparted to the sap; while oxygen, contrary to what takes place in the lungs, is given off. The sap is both rendered of a thicker consistency and much more carbonaceous quality than before, and according to some eminent authorities, is not exactly black as it appears, but of a dark blue colour.

"The sap, after it has undergone these changes, passes to the under side of the leaf, and is returned through the foot-stalk to nourish the branches, the stem, the root, and other parts of the plant, in the same way as blood is passed back by arteries from the lungs to the heart, to be sent to all parts of the animal body."

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The Veterinarian for July. London, Longman and Co.

In the present number of the *Veterinarian* we are presented by Mr. Karkeek, of Truro in Cornwall, one of the joint editors, and a gentleman whose efforts to aid the cause of scientific agriculture have frequently been laid before the public through the medium of our columns, with a "*Review of Liebig.*" We have had our attention upon several occasions called to reviews of the works of this celebrated German chemist, and to reviews of the reviewers, but to none of *them have we felt* disposed to afford space in our columns for notices of their labours. Mr. Karkeek has, however, by his lectures before the various agricultural societies, and by his labours on behalf of the farmer, so eminently entitled himself to all the consideration we can give him, that we have unhesitatingly selected his paper for our present number.

After introducing the subject of *Animal Physiology* in the following words,—

"According to Liebig, all the substances which constitute the food of animals should be divided into two great classes—the *nitrogenized* and the *non-nitrogenized.* The former serves for the nutrition and the reproduction of the animal body, while the latter ministers to quite different purposes, being used in respiration, in the production of animal heat, and also in that of fat. Out of the fifty-five elementary bodies which compose the material universe, there are at least twelve of them that enter, more or less into the composition of plants and animals these are carbon, oxygen, hydrogen, nitrogen, sulphur, phosphorus, iron, potash, soda, lime, silicon, and magnesia. These simple bodies, as they are called, form a part of all organized structures."

Mr. K. proceeds :—

"It must be evident that the increase of mass in an animal body and the development and reproduction of its organs—depend upon the blood, consequently those substances only which are capable of being converted into blood can be regarded as nutritious; so, in order to ascertain what parts of our food are nutritious and what are not, we must first compare the composition of the blood with that of the various articles of food.

"When blood is allowed to coagulate, it separates into a yellowish liquid—the serum of the blood—and a gelatinous mass, which adheres to a rod or stick in soft elastic fibres, when coagulated blood is briskly stirred. This is the fibrine of the blood, and which is identical in all its properties with muscular fibre, when the latter is purified from all its foreign matters.

"The second principal ingredient of the blood is contained in the serum, and gives to the liquid all the properties of the white of egg, with which it is identical. When heated, it coagulates into a white elastic mass, and the coagulating substance is called albumen.

"Caseine is another *nitrogenized* compound, and is identical with cheese. The blood of the young animal, its muscular fibre, cellular tissue, nervous matter, and bones, must derive their origin from the *nitrogenized* constituent of milk.

n which we learn that blood and flesh
rogenized, whilst fat, and we appre-
he elements of fat, are *non-nitrogen-*
heese being also nitrogenized, its
ts will, we assume, for the most
nitrogenized also.

the sources whence these substan-
derived Mr. K. suggests :—
n the newly expressed juices of vege-
e allowed to stand, a separation takes
a few minutes; a gelatinous precipitate,
y of a green tinge, is deposited, and
n acted on by liquids that remove the
matter, leaves a greyish-white sub-
ell known to druggists as the deposit
etable juices. This is one of the
ed compounds which serves for the
of animals, and has been named vege-
ine. Again; when the clarified juices
ious vegetables, such as cauliflower,
, mangel, and turnips, are made to
gulum is formed, which it is absolutely
le to distinguish from the substance
rates as a coagulum, when the serum
or the white of an egg diluted with
heated to the boiling point. This is
albumen.
third nitrogenized constituent of the
food of animals is vegetable caseine.
tance is chiefly found in the seeds of
ans, and other leguminous plants.
se seeds are softened in water, then
ith that fluid, and the mass farther
nd strained with a fine sieve, there
rough it a solution of caseine, in which
suspended. When the starch has
he supernatant liquor is a solution of
which is always like milk, turbid, partly
ended fat and partly from the gradual
the air on the dissolved caseine, lactic
slowly formed, which causes a gradual
."

e, albumen, and caseine, Mr. K.
, are, according to Müller, modifi-
f a compound which he calls *pro-*
ich latter is again composed of
hydrogen, nitrogen, and oxygen.
ne, with a small addition of inor-
tter, as sulphur, phosphorus, pot-
a, salt, and phosphate of lime,
nto the composition of *albumen*,
nd *caseine*, which, according to
are the same whether produced
ls or vegetables.
rding to the theory of *Liebig*," says Mr. K., "proteine is produced by vegetables alone, and cannot be formed by animals; although the animal organism possesses the power of converting one modification of proteine into another, fibrine into albumen, or *vice versâ*; or both into caseine, &c.

"The following ultimate analyses by some of the most distinguished chemists prove these different positions:—

Ultimate Elements.	Vegetable Fibrine by Scherer.	Vegetable Albumen by Bousengault	Vegetable Caseine by Scherer.	Flesh—Beef, by Playfair	Albumen from the Serum of Blood by Scherer.	Fibrine (Animal) by Scherer.	Animal Caseine, by Scherer, from fresh Milk.	Proteine from Vegetable Albumen by Mulder	Proteine from Animal Albumen by Scherer.
Carbon ……	53.064	52.7	54.138	51.83	58.850	53.671	54.825	54.99	55.160
Hydrogen ….	7.132	6.9	7.156	7.57	6.983	6.878	7.153	6.87	7.055
Nitrogen ….	15.359	18.4	15.672	15.01	15.673	15.763	15.628	15.66	15.966
Oxygen …. Sulphur …. Phosphorus, &c.	24.445	22.0	23.034	25.60	23.494	23.688	22.394	22.48	21.819

"The nutritive process is seen in its simplest form," proceeds Mr. K., "in carnivorous animals. With the exception of hoofs, hair, feathers, and the earth of bones, every part of the food of carnivorous animals is capable of assimilation."

As to the food of graminivorous animals, Mr. K., on the authority of Dr. Lyon Playfair and Brassingault, whose table was rendered familiar to our readers in the lectures delivered by Dr. Playfair before the Royal Agricultural Society of England, observes:

"The process of nutrition in the graminivorous animals appears at first sight altogether different. Their digestive organs are more complicated, and their food consists of vegetables, the great mass of which contains but little nitrogen. We have already seen that vegetables produce, in their organism, the blood of all animals; for the carnivora, in consuming the blood and flesh of the graminivora, consume, strictly speaking, the vegetable principles which have served for the nutrition of the latter. Thus vegetable fibrine and albumen take the same form in the stomachs of graminivorous animals, as animal fibrine and albumen do in that of the carnivora.

"The diet most valuable for rearing animals intended for great muscular exertion, are peas, beans, oats, and hay. Labour consists in repeated muscular contractions; and no muscular effort can be performed without the expenditure of muscular fibre. One of the principal elements of muscle is nitrogen, which is supplied with watery muscle from the blood in the form of albumen, which is the starting-point for the various tissues. This explains a fact already established by practical men, uniting, as it were, "practice with science." It is by proper feeding, besides sufficient shelter given to the young stock during the first three winters, that some horses are got to such perfection as we sometimes see them in, having clean limbs, large powerful muscles, and good action; while, had those very animals been kept hard and exposed to the weather they would scarcely have attracted any attention.

"For colts, that food is preferable which contains, in addition to a great quantity of fibrine the largest quantity of phosphate of lime. The corn-seeds—wheat, barley, and oats—and the red clover among grasses, are valuable articles of food on this account

"It has been suggested by Professor Johnstone of Durham, that, as in many cases corn is too expensive a food, and these kinds of corn do not exactly agree in other respects with horses (we mean barley and wheat) *that bone-dust* or bone-meal should be given as an article of general food for growing animals. There are many things which look well in theory that will not bear the test of practice; but, should this succeed, we might then hope to minister directly to the weak limbs of the young stock, and at pleasure provide the spare-boned colt with the materials out of which limbs of greater strength might be built up."

Bone meal was some years ago introduced into the bread manufactured for the French army, with the view possibly, like the young stock of our author, to "build up" amongst them "*limbs of greater strength.*"

Agricultural Improvements, Letter I
I. J. Mechi.

We have received from Mr. Mechi letter on Agricultural Improvemer we are bound to say it contains man as well as truthful remarks.

In the following he slightly touch an anomalous evil, but one for no remedy has yet been discover long as an American State will offe pect of usurious interest, so long Sydney Smiths of this country ren capital thither; and so long also, will our John Bullism prevent u alarm at the shameless repudiation states:—

"The existence of a superfluous capi a superabundant unemployed populat dangerous anomaly—threatening, in it uance, ultimate destruction to our Luxury for the wealthy few, and povert willing, but unemployed many, must discontent, anarchy, and ruin. It is an fact, that much of our income is deri the capital we lend to foreign countries in our own, we dole out grudgingly, in charities, a tithe of what ought to b and well-earned wages of the industri not employed, labourer."

We are disposed to agree with M the amazing amount of capital requ the improvement of the British s we think his mode of raising th necessary for such improvement, closed in the following, worthy consideration:—

"In considering how these improver be most readily effected—it is quite individuals generally have seldom th the ability, or the inclination to ca *perfect* system of agricultural improve must be done by companies of associa talists, the same as our railways and o undertakings. I will venture to as experience, that there is not, in ag undertakings, *one-tithe* of the difficul certainty that attended railway operati

"Mortgagees might transfer their to the company, with full authority to necessary improvements, on condition ing from the company all benefits above five per cent. interest for the C capital. Should the landowner desire company would have the opportunity of purchasing outright by public competition; or the landlord might have the power of redeeming his property, on paying the company principal and interest up to a period of sufficient notice."

This latter arrangement is, however, expressly against the statutes in mort main, and would be highly dangerous to the country.

The following are excellent hints to landlords :—

Now a bad farmer is almost sure to get a new lease (for who is anxious to take it after him), whilst a thorough good one is almost as certain to be turned out, or have his rent raised—the landlord being generally ready to avail himself of those improvements which a wise farmer is compelled to make for a profitable return. These improvements are *boná fide* his property, and ought to be legally as much so as the coat on his back; and it is a scandal and disgrace that they are not valued to the incoming tenant.

* * * * * * * *

"*With regard to the pecuniary relation of landlord and tenant,* I shall endeavour to show that long leases and a corn-rent (that is, the value of so many bushels of wheat at the current price of the day) are essentially beneficial to both landlord and tenant, as well as to the country at large. Under this system landlord and tenant have but one common interest—they rise or fall together. The present custom of fixed money-rates acts alternately most injuriously on both. An unexpected war may find a tenant benefiting by an enormous price; whilst his landlord has only his four per cent., reduced, in fact, to two per cent., by all commodities having risen to war prices."

We commend the Royal Agricultural Societiesfor what they have already done, and recommend to the attention of their respective councils the following :—

"Our Royal Agricultural Society, to which every landowner and farmer should belong, has already effected vast good; but still greater remains to be done. They should have extensive model farms, with schools and libraries attached. *There* should be shown, after patient investigation, the most perfect and certain modes of drainage, irrigation, and warping; the most complete, durable, and economical arrangement of buildings: the most advantageous mode of tillage and course of crops; the greatest economy of manure and labour; the minimum of seed and maximum of distance in sowing; the most advantageous stage of ripeness; the effect of steeping seeds in manures; the most profitable mode of housing and feeding stock, and the advantages of removing all trees and fences. When all these national and important subjects are accurately ascertained by a competent but limited board of paid and responsible directors, deciding regardless of personal considerations; then let a code of unerring rules be promulgated and enforced with the full weight and sanction of the society, as a guide and beacon to the doubtful wanderer in search of agricultural knowledge, who, eager to avoid the shoals of error, is now distracted by multitudinous and conflicting opinions."

There is no greater truth than the following :—

"A great error amongst farmers is the desire to grasp a large quantity of land, instead of concentrating their capital by improvement in a smaller compass."

Would that our farmers were as deeply convinced of the benefit to be derived from what Mr. M. very justly denominates, the "concentration of their capital" as we are.

On the subject of agricultural books, and the labours of literary and scientific men on behalf of practical farmers, Mr. M. observes :—

"Some may say, "Oh, farmers are too prejudiced to read.' Experience has taught me the contrary. Bring them the book—they may affect to despise it, but they will keenly, anxiously and with sound sense, scrutinize all that concerns their pecuniary welfare. Reason tells us that the farmer, born, bred, and mixing with others of precisely the same way of acting and thinking as himself, cannot be expected to have so expanded a mind as a manufacturer or trader, who is daily in contact with strangers from every corner of the globe.

"It is to be feared too, that jealous landlords form too low an estimate of a farmer's character, and consider his success and elevation as degrading them—as if his gains were their loss. Let us hope this feeling will gradually give way to a better, and that a farmer who follows the hounds, and dresses and acts respectably, will be considered quite as likely to farm well and make as good a member of society as one who imitates in every respect one of his labourers.

"Where individuals are desirous of improving their own estates without disbursing capital, I know of no plan so good as allowing the tenant annually a certain sum out of his rent for improvements, taking care that they are really beneficial, which is very easily ascertained and arranged: generally speaking, tenants would most readily contribute their share, particularly in the matter of drainage."

We submit, as a better plan, a lease commensurate with the proposed outlay.

"I shall publish annually, a faithful and correct debtor and creditor account of my farm, valuing the crops and stock at one uniform average price (the average price in the county of Essex for the last fourteen years). This will prevent confusion, and admit of a correct comparison of one year with another. The *quantity* produced, and the cost of producing, will be the principal and most interesting considerations.',

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Quarterly Journal of Agriculture, and the Transactions of the Highland and Agricultural Society of Scotland. No. V. Blackwood and Sons, Edinburgh and London.

Mr. Trimmer's paper *On Agriculture and Geology*, which opens the July number, is one of those delightful, because familiar, disquisitions which renders even a dry subject (and what can well be more dry, except to a professed geologist, than a lengthened account of the Palœozoic rocks) interesting.

Mr. Barlow, of Wilmslow, Cheshire, whose highly honourable admission at the late examination of the Edinburgh Veterinary College we noticed last month, contributes a paper "*On Puerperal Fever in the Cow*," from which we make the following extracts:—

"What is commonly termed puerperal fever, I, along with many others of the profession, consider to be an affection of the nervous system, and not, as in the human subject, to consist primarily of peritoneal inflammation. Still, I am free to acknowledge that peritoneal and uterine inflammation do occur in the cow, and that the appellation, if limited to such only, would be proper. But why apply it, as is continually done, to inflammation, not only of those parts, but to that of the brain, lungs, bowels, &c., merely because occurring near calving?

"There is also another affection to which cows are liable at this time, bearing in its symptoms considerable similarity to the disease we are about to consider, yet totally different in pathology, still it also is almost invariably called puerperal fever.

"It consists merely in inability to rise, or to properly use the hind extremities, depending *generally upon weakness* of the system. It is accompanied with little fever, no coma, or
symptom of cerebral disorder. These
mostly recover under good nursing, ext
and internal stimulants, aperient aromatic

* * * * * * * *

"As before noticed, the symptoms are
denly developed, and decisive in characte
curring within three days of calving, often
twenty-four hours of that process, as im
ately on the establishment of reaction,
collapse, which, to a greater or less e
according to constitutional peculiarities, ac
panies ordinary cases of parturition.

"In some cases of puerperal fever, all
toms, constituting various phases of the di
have been developed within six hours of
earliest appearance.

"The first grounds for apprehension
from less quantity of milk being yielded
natural, from an evident impairment of ap
with a stronger, though not much more a
rated, pulse than usual after calving.

"The conjunctival and vaginal mem
are injected. Horns and mouth hot,
glistening appearance in the eyes.

"Such slight deviation from health
scarcely be called actual disease—in fact
hardly be detected as a state exceeding i
racter the usual stage of reaction, and
invariably eludes the vigilance of those in
nary attendance upon cattle, whom expe
has not qualified with more than usual dis
nation, as it merely consists in a febrile st
system, always short, immediately prec
the establishment of disease, soon to be
fested by unequivocal symptoms.

"The cow presently entirely refuses
respires more quickly, the pulse however s
rises above sixty, but is full, sometime
pressed; there is little milk secreted, and
evacuations. We may sometimes observe
impatient tosses of the head—madness—
peculiar expression of distress always is pr
But the symptoms now more directly intim
the forthcoming disease are a remarkable c
in the eyes, which have assumed a light
hue, and involuntary swerving motion of
and constant shifting of the feet to preser
proper balance; indeed the beast will freq
support herself against the stall.

"The cow-herd, now fancying som
wrong, informs his master, who takes pr
a few pints of blood, and administers
favourite drench. These means however
produce any other effect than that of de
the assistance of a practitioner, till any re
he may apply, however judiciously di
will, by the delay, be rendered complete
effectual.

"He, perhaps, having had some dist

rriving, finds every symptom in-
everity. The cow has fallen, and is
ith head turned upon the side, or
om inability in the cervical muscles
t; the rumen is distended, causing
during respiration; the powers of
sensation are diminishing; the ears
lous; there is imperfect or total
of light applied to the eye, or of
the eyelids; power of deglutition,
ely abolished, is much impaired;
evacuations; an intermitting pulse,
tremities, stertorous breathing, and
dashing about of the head.

ensity of these symptoms increases.
he head, the lower jaw hangs pen-
uld any liquid be administered, from
f sensation and motor power in the
larynx, the fluid passes directly
hea, occasioning spasm, sometimes
pulse acquires a feeble stroke, but
quickness; breathing, from accu-
ucus, more and more stertorous; the
ntracted; the sphincters lose their
and, should the head be lower than
ood will return from the stomach
y, occasioning and intolerable stench.
aving supervened, I never knew a
.

ymptoms are, as may naturally be
ore intense in some cases than
essarily influencing their duration.
after falling, the cow will struggle
deavouring to rise, which she will
accomplish. I always regard this
in prognosis. Death may occur in
r twelve hours; sometimes the ani-
twenty-four or thirty-six hours, or

ce of causes inducing this disease
any important considerations; due
hereto I conceive necessary, properly
for the morbid phenomena exhibited.
w, of all other animals, is destined to
largest amount of that wholesome
ious beverage, milk. A constant
his fluid is a considerable demand
nstitution in certain states, only in
ich it is yielded largely: these are,
pregnated condition of uterus, and
earlier months of uterine gestation.
, by preserving the former of these
continue yielding milk for years;
the latter months of gestation, its
ensibly diminishes, and, for some
ious to parturition, it is ordinarily
spended. We all know that a large
ilk and an advanced state of gesta-
compatible. With reference to the
sting between *the quantity of milk* yielded and period of gestation, it may be stated that, in an average of cases, by the fifth month of conception, a diminution of one-third its quantity has taken place—by the sixth month, two-thirds—and soon after the seventh, it is usually entirely suspended.

"In what other way can we account for this than by supposing that now the fœtus exercises for its developement a demand upon the organic functions equivalent to the quantity of milk which would otherwise have been yielded; requiring, as it does, in common with that secretion, a large quantity of circulating fluid for its formation.

"Fully to provide for fœtal growth, there is, in mammalia, during gestation, a greatly increased, and, the nearer parturition, a rapidly increasing, developement of vascular system in the parent; but, perhaps, in no animal does this correspond in extent with that of the cow, which may be accounted for by the fact that Providence has destined her, not only amply to provide support to her offspring, but also to contribute largely towards that of mankind. Hence her peculiar liability to various diseases, both in a puerperal and barren state, arising from an existence of a larger quantity of blood in the system than is immediately necessary for growth and nutrition."

Again,—

"Parturition, by separating the fœtus and its membranes from the maternal uterus, involves a sudden and complete check to the current of blood recently required by it in utero, being now provided with means of sustaining an independent life, dependant, nevertheless, still on its parent for food—namely, milk, and that milk secreted from the circulating fluid, previously imparting nutrition in another form and through another channel.

"Should, then, any constitutional or other cause interfere, so as to prevent a secretion of milk, in full proportion to an existence of its elements in the system, or this effect be produced by any tardiness of the udder in resuming its functions, we can easily conceive that, under such circumstances, some organ. or class of organs, previously wrought upon by unusual stimulus, would, from the consequent predisposition thereto, assume a diseased action. Again, in other cases, the udder may perform, to the full extent of which it is capable, all its natural functions, and still, so far, inefficiently counteract this sanguineous state of system as to permit an existence of the same condition.

"Thus, I infer, arises one great, if not the greatest, cause inducing puerperal fever; and that the nervous centres are at this time more than any other susceptible of morbid impressions, we have, in my opinion, from these collateral considerations, a right to infer; indeed, so far admitted is this, that many practitioners are of opinion that the cow is, during her later period of gestation, in a constant state of excitement or slight sympathetic fever.

"It will then be evident that cows yielding large quantities of milk, and kept on stimulating food before calving, must be extremely liable to this disease. Of this we have daily evidence in its frequent occurrence among farmers or dairy keepers whose interest or pride it is to create as much milk as stimulating food will produce; and of its comparatively rare occurrence among others who habitually, either from neglect or poverty, keep their cows lean. It is, indeed, proverbial, in some districts, that fat cows, if good milkers, are pretty certain to fall of "milk fever," a name, among professional men, now in disuse, but one, like many others, arising from observation, and certainly more proper than the one we adopt.

"A fat state of body alone is, by many, considered a cause of this disease, shewing, as it does, the materials and processes of assimilation to counterbalance the expenditure of vital power, a state certainly favourable to disease of various kinds. I have, however, uniformly observed, that here puerperal fever, in the character we are now considering it, seldom makes its appearance unless the vascular and, consequently, the lacteal systems are fully developed—a state not always in unison with the former.

"In no one instance do I remember to have seen it occur in a bad milker, however fat, as in these comparatively non-vascular constitutions, there is not a sufficient quantity of blood to throw back upon the constitution which can operate injuriously. It is also worthy of remark, as tending still further to confirm this view, that such description of cows have uniformly small calves, while those of an opposite constitution, although lean, have generally large ones.

"The disease never occurs at the first or second calving, should it take place at or before four years of age, very rarely, indeed, at the third, not often at the fourth, if these take place before five years old; it frequently occurs at the fifth, and the liability in predisposing constitutions increases with each successive parturition. The cause of its non-appearance in early life is due to the fact that, at this time, the system has not arrived at its full degree of growth and consolidation, which processes being consecutive with gestation, and of considerably more active character in the young than adult animal, there are, of necessity, greater demands or adaptations for an accumulating quantity of blood than at *maturer age* to accomplish those indispensable *processes of growth* and developement, thereby preventing the possibility of its injurious determination to one organ or tissue exclusively.

"The disease never follows abortion, which we can easily account for, on the ground of its non-appearance in bad milkers.

"There is a pretty certain preventive in milking the cow some time before calving—in full blood-letting before or immediately after—in purgatives—very limited diet—and in other depletive measures, each and all tending to illustrate the necessity of a vascular state of system for its developement.

"Some eminent veterinary surgeons consider that constipation is more frequently than any other, or, indeed, is exclusively the cause; and in support of this view urge the apparently well-founded argument that, so soon as purgation can be established, the cow recovers. Although myself willing to admit constipation may be occasionally a cause, and that at all times it much aggravates the disease, I shall presently endeavour to prove it is far oftener the infallible effect, depending upon a peculiar state induced by the disease, and devoid of those symptoms which would characterise it if a primary cause. I have indeed seen many cases wherein a hardened state of faeces never existed; but torpidity of the bowels, or suspension of their usual action, always is present.

"Very rarely does it occur after protracted cases of parturition, these requiring a considerable expenditure of muscular energy, and consequently, a large determination of blood to that tissue may thus prove cases of exemption. It likewise very rarely follows flooding from the uterus.

"I may again observe that these several states, considered as possessing immunity from this disease peculiarly, are still liable to various others, to which their idiosyncrasy predisposes, exhibiting symtoms totally different to those we have considered, and presenting *post mortem* appearances equally varied from those we are about to detail."—*(To be continued.)*

MANURES.

Subjoined are the latest prices of several sorts of manure:—

Bone dust, 16s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £8. per ton. 15s. per cwt.
Guano, 10s. to 12s. per cwt., according to quantity.
Rape Dust, £6. to £6. 10s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 32s. 6d. per ton: landed and housed, 38s. to 42s. per ton.
Nitrate of Soda, 15s. 0d. (duty pd.) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.

on for Turnip Fly 10s. 6d. per packet,
nt for three acres.
f Ammonia, 24s. per cwt.
f Lime, 12s. per cwt.
£3. 12s. 6d. per hhd. sufficient for
.cres.
28s. and 42s. per cwt.
or Destroying Worm on Turnips, 16s.
.
Soda, 7s. 6d. per cwt.
Acid, 2½d. per lb.

The Markets.

.—The weather has latterly assumed
iable aspect, and a tedious and hazar-
est would not surprize us. The accounts
us parts of the country, state that the
n certain situations, are more or less
withstanding this, and that farmers'
ave been moderate, prices have receded
tent—further we think they will not
another change should occur in the
and a dry autumn ensue.

CORN *except early sown, has bene-*
the change; and though the crop of
will not be an average, it will yet be
h better than was at one time antici-
The same may be said of OATS *and*

OES, *where planted whole, are continu-*
me up, late sown having, we think, on
, or where planted in fresh dung, the
e of early; where the sets have been
al accounts of failure reach us from all
.

IPS, *where sown a second, aud in some*
third time, are just appearing. These
t certainly be a light crop—of Swedes
ll be positively none. Hybrids and some
arieties, may afford early winter food;
t is to become of the stock farmer in the
However carefully he may husband his
s, next May, if the season be late, will
m an awkward lesson. We have seen
r second crops of Clover. These must be
e most of, and every advantage must be
the present growing season.

.—The accounts from the hop districts
siderably. WORCESTER, "*a full aver-*
SUSSEX, "*a failure to a great extent.*" *Ditto the Weald of* KENT. EAST KENT *accounts are more favourable.* WEST KENT *a fair average.*

WOOLS *are a shade better, although the demand in the manufacturing districts is not brisk; 2d. to 4d. per lb. is quoted as the advance upon last year's prices in Scotland.*

LONDON, July 22. Per Qr.

WHEAT, Essex and Kent, new, red	52	54	56
White	54	56	58
Irish		0	0
White		0	0
RYE, old		30	34
New		36	—
BARLEY, Grinding		28	30
Malting		32	34
Chevalier		35	—
Irish		26	28
Bere		26	—
MALT, Suffolk and Norfolk		58	60
Brown		56	58
Kingston and Ware		60	—
Chevalier		60	—
OATS, Yorksh. & Lincolnsh., feed		20	22
Potatoe		23	24
Youghall and Cork black		19	—
Cork, white		19	20
Dublin		19	20
Waterford, white		19	20
Black		19	20
Scotch feed		21	22
Potatoe		23	24
Limerick	19	20	21
Londonderry		19	20
BEANS, Tick, new		32	35
Old, small		36	38
PEAS, Grey		32	34
Maple		34	35
White		35	36
Boilers		36	38

SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..41
Mustard, White...... 6 7
Brown .... 8 11 per bush.
FLOUR, Town-made — 50
Suffolk.... 40 42 per sk. of 280 lbs.
Stockton and Norfolk .... — 40

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		40	42
Hamburgh		38	—
Rostock		38	—
BARLEY		23	24
OATS, Brew		16	17
Feed		14	15
BEANS	—	24	28
PEAS		26	28
FLOUR, American, per barrel		—	25
Baltic		24	25

LONDON AVERAGES.

		£.	s.	d.
Wheat	3775 qrs.	2	15	0
Barley	889	1	15	3
Oats	19957	1	1	0
Rye	—	0	0	0
Beans	1686	1	17	1
Peas	705	1	18	3

SEED MARKET.

	s.		s.
Canary, per qr.	50	to	54
Carraway, per cwt.	44	to	50
Clover, red, English	60	to	74
„ „ Foreign	64	to	74
„ white, English	100	to	130
„ „ Foreign	84	to	125
Coriander	12	to	18
Hempseed, per last	35	to	40
Linseed Cakes, Eng. p. 1000	£10	to	£10 10
„ „ Foreign, p. ton	£6	to	£7 10
Mustard, white, per bushel	—	to	—
„ superfine „	—	to	--
„ brown „	—	to	—
Rapeseed, English, per last	£20	to	22
Tares, English, winter p. bushel	5	to	7
Foreign „ „ „	—	to	—

CHESTER, July 27.

	s.	d.	s.	d.
Wheat, white, 75lbs.	8	6	9	0
Ditto, red	8	3	0	0
Ditto new	0	0	0	0
Oats, 46lbs., new	3	3	3	6
Grinding Barley, per 60lbs.	4	6	4	8
Malting ditto, 38 qts.	0	0	0	0
Beans, new, per 80lbs	6	0	0	0

DUBLIN CORN EXCHANGE—July 26.

	s.	d.		s.	d.
Wheat, white (per brl.)	30	0	to	31	0
„ red do.	23	0	to	29	0
„ inferior, do.	26	0	to	27	0
Oats, feeding, new	11	0	to	12	0
Flour, first (per cwt.)	18	0	to	19	0
„ second do.	17	0	to	17	0
„ inferior do.	13	0	to	15	0
„ third do.	6	0	to	10	0
Oatmeal do.	9	6	to	11	0

WAKEFIELD, July 26.

There is a large supply cf WHEAT and a very thin attendance of buyers at this day's market. The business transacted has been on the most limited scale, and, although a decline of 1s. to 2s. per quarter would have been submitted to, but few sales could be effected. All other articles *of the* the trade partake of the general dullness. *There have been some* beautiful showers of rain during the week, with most propitious weat for the coming haavest.

LIVERPOOL, July 27.

	s.	d.	s.
Wheat, Eng. wh., new, ⅌ 70lbs.	8	0	8
Ditto, red	7	8	7
Irish white, new	7	3	7
Ditto, red	7	0	7
Egyptian	6	0	6
Oats, Eng. and Scotch, ⅌ 45lbs.	3	0	3
Welsh	2	7	2
Irish, new, best mealing	2	8	2
Barley, English, per imp. qr.	34	0	36
Irish, Scotch, and Manx, per 60lbs.	4	6	5
Feeding	4	0	4
Rye, per imp. qr.	30	0	34
Beans, English, per imp. qr.	36	0	37
Irish, &c.	34	0	36
Foreign	34	0	37
Egyptian, per 480lbs.	34	0	35
Peas, English, per imp. qr.	39	0	41
Foreign	38	0	40
Malt, per imp. qr., fine	60	0	65
Flour, English, per 280lbs.	39	0	41
Irish, extra-fine	38	0	40
Foreign, duty-paid, per 190lbs., U.S.	30	0	31
Canadian	27	0	28
Oatmeal, English, Scotch, and Welsh, per 240lbs.	21	6	22
Irish	22	6	22
Indian Corn, per 480lbs.	31	0	33

Cattle Markets.

LONDON, SMITHFIELD.

July 22, 1844.	⅌ st. of 8			
	s.	d.		s.
Inferior coarse beasts	2	6	to	2
Second quality do.	3	0	to	3
Prime large Oxen	3	6	to	3
Prime Scots, &c.	3	10	to	4
Coarse and inferior Sheep	2	8	to	3
Second quality do.	3	2	to	3
Prime coarse woolled do	3	6	to	3
Prime Southdown do	3	10	to	4
Lambs	4	0	to	5
Large coarse calves	3	2	to	3
Prime small do	3	10	to	4
Large Hogs	3	0	to	3
Neat small Porkers	3	8	to	4

LIVERPOOL, July 22.

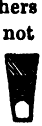
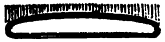
There is little or no alteration to quote in pri or supply at our Cattle market of late, th number and quality being good for this time o the year. On the whole prices are rather lower

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

AUGUST—1844.

ESSEX IMPROVEMENTS.

We have received from Mr. Mechi, the spirited proprietor of the Tiptree Hall estate, in Essex, a plan and elevation of his buildings, and a sectional view of his drains. In the arrangement of the former we do not see that there is much room for comment, though we do not see exactly where the manure heaps are placed, although we think we could show him some farm-steads built at less cost which are equally convenient. One thing, however, certainly has surprised us, which is, that whilst every body in Britain is boiling water every day for almost every purpose—mining, manufacturing, and agricultural—whilst steam engines are erected upon every homestead, even for churning, Mr. Mr., in advance of his neighbours, as he most certainly is in other things, should have neglected to erect a steam engine, as well for thrashing and performing many necessary barn operations as for cooking the food for cattle. It cannot be said as a reason for his not doing so that the farm horses will be only employed in thrashing when other work on the farm cannot be got on with; this may or it may not be so—it may be that at the very time he most wants his horses on the farm the market may most want his grain: it may and most likely will be that, whereas formerly, in consequence of the wet state of the soil, weeks and weeks elapsed, and the horses could not be with propriety taken out to work, and must, therefore, either do the thrashing or stand idle, now, in consequence of the thorough-draining, there will be perhaps not a fourth of the time in any one year during which horses may not with propriety be at work in the fields, as compared with the average periods of former years, when such work could not be performed. We cannot, therefore, but regret that Mr. M. should not have rendered his farm-stead as complete as, in our opinion, a steam engine would have rendered it: it was an omission which we think he will find himself compelled to make good ere long. Whilst we are in the fault-finding vein we may as well state our objections to the mode of placing the broken or pebble stones in the drains. We have placed them ourselves, and have been in the habit of seeing others place them over the drain pipes and not under them, in the following form,  which has, in our opinion, amongst other advantages, the following: viz., that whilst it allows a free percolation of the water to the pipe it filters it in its passage, and prevents the chance of choking from sandy particles carried with the water and deposited at the bottom of the pipe. The flat pipe suggested by Mr. M., and thus  described on his plan, is not without its advantages as being both tile and sole in one. We have used pipes in this form, with a bore equal to about 2½ inches, and find them with stone both economical and useful. In other respects there is much to approve in Mr. M.'s draining, which, as compared with the usual straw and twig process of his county, is an important advance in the right direction. In another column we have noticed the last two letters which Mr. Mechi has published upon the subject of these extensive improvements, to which we beg the attention of our readers. The time is not very far distant when, according to his promise, Mr, M. must show cause against the rule so often made absolute against him, viz., that he has laid out money injudiciously, and which can in no way make him an adequate return. The publication of his return of annual income and expenditure will test this in a most effectual manner, though until the course of cropping is complete the return cannot be considered conclusive either way.

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THE CONDITION OF THE ENGLISH LABOURER.

Mr. H. Colman, the intelligent American, who has been so long amongst us, taking note of our agriculture and social condition, has upon several occasions expressed his sorrow for the position of the English labourers; whom he represents, upon the authority of an assistant poor-law commissioner, as incapable of rising in the world, whatever the amount of their individual talents and industry: he quarrels too with the term "servant" as applied to our labourers, and even took occasion at the meeting of the Northamptonshire Agricultural Society to tell the president that the term "servitude" sounded harshly to his ear.

Now as regards terms I will not band words with Mr. Colman—the term "hel may sound better to his ear than "servant but what, in *fact*, is the true distincti The labourer, be he help or servant, h much the same duties to perform in States as here, and although the wages such duties may in America progressi increase the further you find yourself vancing into the Western States, yet I prehend in the great Atlantic cities a in the Eastern States the rate of "*wage* or (as that term too may for aught I kno sound harshly to the ear of Mr. Colman) o "*salary*" will be pretty much the same in amount, on an average, as it is with us. It is true the same sum of money will purchase there a greater amount of *certai* necessaries than with us, but it will als purchase much less of others. Mr. Colma gives tables of expenditure of an Englis labourer, I beg to do the same. I wish could as readily furnish forth the househol expences of an United States "help":—

W. JONES, WIFE AND TWO CHILDREN.

	s.	d.		s.	d.
Rent, (cottage and garden	1	10	Wages	12	0
Flour and yeast	2	6	Extra, for six weeks in harvest, 18s.	0	
Bacon, 1lb	0	7	Fruit, &c. sold from garden, £3. 5s. 0d	1	
Potatoe (rent)	0	6	10 bushels potatoes, sold in spring at 2s. say	0	
Meat, 3lbs	1	6	Wife earned, working in hay, £1. 4s say	0	
Tea, coffee, sugar	0	10½	She gleaned in harvest 4 bush. wheat valued at 7s., say	0	
½lb candles	0	2½			
½lb soap	0	2½			
Clothing, self, wife, and children	1	6			
Coals	1	2			
Poor rates	0	1½			
	11	0		14	
				11	
				3	

Leaving a balance of 3s. 11½d. of whic 3s. 6d. was carried to the Bank for Savings weekly. Of course there are abu dant instances of less provident indiv duals, who with the same wages are n able to save anything, and who commu the 18d. for meat into twice that sum f drink. There are, too, many who do n earn in winter more than 9s. per week, a many not more than 10s.; but there a also many who obtain 14s. or even 15s. per week: taking the harvest into account I am inclined to place the average earning of labourers in England at a fraction above 11s.; but the mere amount of money is not, I contend, "the question"—it is what portion of positive comforts are the English labourers able to obtain. As the children grow up their earnings ought to and in most cases do maintain them until they are able to provide entirely for themselves. So much for the mere labourer. Now for the power of a member of this "distinct and servile class" to "rise above his condition."

James Mowton—Father and brothers labourers, himself brought up as a farm-labourer; lived in the service of one master for a number of years at £16 a year, had the care of 14 horses. Saved in that service "better than £100;" married wife from a neighbouring farm, where she too had lived several years as dairy maid, and had saved some money. Rents 16 acres at 56s. an acre, has five cows and one horse; the cows pay rent and taxes, and somewhat more; employs one stout boy, and hires but little extra labour, except amongst potatoes, where father assists.

Joseph Woodlee, (in the same village,) brought up a labourer, used to *follow* a thrashing machine, *i. e.* upon the first introduction of those travelling implements had the care of one for his master, and went with it about from farm to farm, had £1 a week wages. Saved some money, wife had saved a little; has two horses and eleven cows.

In the same village, **William Davies**, brought up a country shoemaker; father of the "servile class;" saved some money at his trade and took a field, some time afterwards took another, and has now two horses and six cows; has the folly to be affronted when any allusion is made to his former trade.

I have been induced to trouble your readers with these statements because you drew our attention to Mr. Colman and his tour in a recent number. It always affords me the most sincere gratification to note the advancement of deserving men, and whether such men are found on this side the Atlantic or the other, in my mind makes no difference; I am glad also to afford you the means of repudiating the statements of Mr Colman and the assistant poor-law commissioner whom he quotes.

August, 1844. O.

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A TRIP
TO THE RICHMOND MEETING, 1844

BY A DERBYSHIRE BROWN.

(For the British Cultivator.)

If any one is disposed to doubt that the present is a "go-a-head" age, as the Yankees would call it, he has only to move a few days out of his home in some sequestered wood-enclosed valley where he evidently lives, and look into the busy world—the world of letters—of science —of art. Books he would see multiplied by ambidextrous pens—printed by steam—issued by tons on the vehicles of flying carriers—machinery doing the work of men, more numerous than those who built the pyramids of Egypt; and he would see new roads—new canals—new productions rise, as if some lamp of Alladin were calling forth the energies of ten thousand genii.

In all this whirl of the intellectual times, when gentlemen are becoming mechanists, and farmers philosophers, who would not leave his plough-tail a day or so—jump on to a railway train to see the splendid doings of that greatest of all the great and best of all the best provincial agricultural societies. Before the wings of zephyr therefore brush off the morning dew, off we set—away we dash to the railway station, every heart throbbing and with many an anxious look at the watch, lest the fearful monster should leave us behind. Up we come an hour before the train starts—how dull—it seems to be ten: our eyes are strained in looking down the shining lines of metal to watch every dark speck which perchance might obliterate for a moment the glistening of the morning sun. At last she comes majestically, yet stealthly, along as if propelled by some magician's talisman; she stops—up we jump—whirr goes the fearful whistle, and away she dashes as if she emulated our anxiety to set us down early at the all-absorbing Richmoud. Nothing but oblivion occurs—the steady clatter of the mechanical monster—the flying haste of houses, and trees, and churches, and now and then a halt at a station—the bustle—the confusion—the cries for and challenges of luggage—again a whizz; this repeated some score of times, until a tall official vociferated "Cowton Station." Off we jump—no luggage; away flies the clattering fury, as if escaping joyously from such a groaning load; and now a rush for the coach: thin and stout, big and little, all aim at the victimised coach. John vociferates, and entreats, and even so far loses his coachman-like character as to command "that 'ere gentleman" to get down, but no—there is no individuality in a republic, and eighteen persons get squeezed into a coach "licensed to carry four inside and twelve out." Away trudges John, but what a contrast—our own single-horse cart seems to go faster: our heads had not forgotten the whirl of the mighty steam-engine. Much indeed were our critical farmer's eyes pained to see such wretched farming—horrid bare fallows, ridge and furrow—wretched crops of weedy corn—miserable absence of all green crops: alas! is this Yorkshire farming? Our sentiments of disgust were only just excited before we came to the noble Roman road, which, for its excellence and straitness, would convince any man of an ordinary capacity that had the Romans better understood the nature of steam and iron they would have had vast and expensive railway companies—only they would have paid less to their directors.

Well now we begin to see that the road we had been travelling was only brought to light by the railway, and here the inhabitants had only just got their eyes open; but when we came to a road opened out by the Romans, and since kept pretty free from growing grass, at least until lately, that really the farmers were awake—turnips and corn, and clipt hedges, and level fields, and all but grass, which we suppose their short-horns had eaten, were in rich abundance. At last, the long wished for place burst upon our view—the most delightful perhaps in the kingdom—Richmond in all her glory appeared. Here the noble overhanging wood of varied foliage, the magnificent Swale pouring her rich and creamy waters over the massive rock, the houses shading the valley and sending up their blue smoke before the waving trees, the noble castle standing on her proud eminence, her splendid natural precipic station, the more richly decorated shire of the once tenanted Friary, the beautiful church with its mournful accompaniments stretched immediately under the eye; such a prospect at another time would have enchained—enchanted us.—"Fine this, sir," said John, the coachman, in his *sang froid* way, giving it emphasis *only by* the skilful application of the whip to *his panting cattle;* "very fine, sir:" "see how the wind has torn the Union Jack on the high church steeple;" 'kim ep!' Our eyes however met another object, amid the lowly ruins of the stately castle, once the fortress of the noble Allan, now the property of the noble Duke, whose name is dear to every farmer, and who derives his title from it. Amid the ivy-crowned and mouldering ruins—monuments alike of permanency and of change, stood a lofty oblong boarded area, evidently a modern work, for a modern purpose, and for a temporary object—a purpose very different from that of the erection of these massive towers. It required no critic to discover that it was the dinner pavilion of the meeting which it was our object to attend.

Off the coach, and we were in a world of bustle. Loud calls for persons, and places, and things; cries for beds, for great coats, for carpet bags, for servants, for vans, for drills and corn-crushers, for, in fact, almost every useful nameable article of dress or utility. The poor bewildered landlady looked miserable: such an host of demands could not be answered; and breathless and gaping she twirled her fingers in a reverie, attending only to the sweat-covered waiters who came in rapid succession with all sorts of demands. The scene here beggars all description: the din of horses and wheels outside, of carriages in the yards, of parties trampling up and down stairs, of doors opening and shutting, of bells clattering as if they would come down, of enquiries of every kind, for tickets and places; for persons it were in vain to enquire.

As we came to see the agricultural sights, not the bustle, *we* began to enquire for the field. A stream of persons were wending their way thither, not as we might have expected, with rapid and anxious steps, but slowly and measuredly along, as if there was no object of attraction there. The secret was soon told. The judges was at their work, and there was no admittance for one full hour. Hundreds of loiterers were, however, standing near the door, expecting a crush nearer the time, and taking a forward place before one of the entrances. On looking round, the parties exhibited any appearance but that of seekers of amusement or information: they lacked something, careworn, anxious, and disturbed. The Yorkshire farmer, taking these as a specimen, might be considered stupid, and silent, and sullen, not the open, buoyant, hilarious, and joyous character he is represented to have; but the secret workings of the soul, visible on the countenances of the parties at the gate, were, by a bystander, referred to their being competitors at the show. The animals they had watched and nursed with a care and attention almost paternal, were petted against those of many as anxious and careful a rival breeder; and the caste of a certain strain of short-horns or sheep in a measure depended upon the decisions of that day. Not only did they know that a wandering crowd of admirers would surround their favourite all the day if he won the rosette, but a more profitable host of purchasers would, led by the judgment of the udges that day, follow the successful herd home, and there make the purchases at almost the animal's weight in silver. This accounted for he silent contemplations many an otherwise olly and happy-faced Yorkshireman that morning entertained.

As we saw no great object in loitering about he door, we perceived a fussy son of Richmond whose face reminded us of corporation dinners and Port, and to whose good nature and intelligence, seeing we were strangers and hearing we were not "Yorkshire," kindly became at once our informant and our cicerone, and recommended us to go to the pavilion in the Castle-yard, from which place George IV, who is by all persons accounted to have the very best taste, said "it was the most enchanting view he ever beheld." Loyal as he might be we felt convinced he would not have quoted George IV if that individual had not so much praised Richmond.

The porter of the Castle, an official vocabulary of antiquarian and legendary lore, a tailor too who knows every stone of the Castle, and reveres their very shadows, the acme of politeness and good nature, opened with all the conscious care of an official the Castle gate, and we were introduced into a most magnificent building. It was constructed in a very peculiar way, but safe and substantial. It consisted of perpendicular and horizontal planks piled upon each other, which strongly reminded us of the log-houses of the American back woods, and inside a complete lining of scarlet cloth, deadened by the calico windows, which admitted a chastened light, on which the painter's brush had been plentifully but very tastefully applied. Immediately in front was an elevated *dais*, on which a table across the building was raised to accommodate the aristocracy. A grand centre able extended the whole length of the building, rom this one, either side tables diverged at ngles, pointing to the chair. Immediately over the chair was a large window, painted in precise imitation of the eastern windows of varius churches, and albeit in the very place where he Castle chapel window had been, as if the lesses of the farmers were thus readily substituted for the masses of the priest, in the palmy ays of the Roman establishment.

On the contrary end a tasteful gallery was ected to contain an exhibition *of the feminine* beauties of the county, witnessing the exhibition of plates, knives, forks, and the despatch of sundry dishes of what they had before seen alive in the field. The scarlet sides, the snow-white tables, the dew grey gallery, the glitter of glasses and cutlery, and the splendid paintings, for houses were ransacked miles round for adornments for the festal—brood mares and landscapes, horses and saints, scripture pieces and family portraits, heathen deities and cattle pieces were placed helter skelter, but with excellent taste, and in a way which gave not only an interesting but splendid effect to the whole. It looked, indeed, like a vision in fairy land. There was the beautiful Nell Gwynne, the celebrated bull "Comet," the paradise of Mahomet, a view of Richmond, &c.; and making arrangements, giving orders, inspecting, investigating, planning, were two or three gentlemen, whose very souls seemed engaged, and whose every energy was employed in giving zest and success to the whole.

There was the mayor, whose very external at once denoted the man and the gentleman; who appreciated the honor done to the borough during his mayoralty, whose paintings we were told graced the walls instead of his own house, when the latter was full of company, and whose anxiety for a successful meeting prompted him to fag in matters of detail in the pavilion like a porter; nor did he feel himself degraded, but elevated by occupation so laudable.

There was Captain Harland, energetic, firm, with the order of a well-disciplined mind in every movement, and which with good taste he carries into everything he does—he seemed to say, "it shall be done *well.*"

There was a Mr. Bradley, an accurate keen observer, a decided hard-working clever man, trained and schoolled in the beautiful and tasteful; he, too, was giving the whole of his powerful mind, his time, and his energies, and with these no wonder this temporary dining room was perhaps unrivalled in every previous effort. The romance of the position, the beauty of the scenery, the mournful ruins too seemed to smile on the useful purpose within these solemn and silent walls, and to revive in fresh beauties when so occupied with contrastive scenes and peraphemalia.—*(To be continued in ovr next.)*

◆

AGRICULTURAL QUERY.

Will you be so kind as to allow me, through the medium of the *Farmers' Herald* to ask for information, from some of your numerous agricultural readers, on the following subject. I am fully convinced that our tillage crops, in this county, are very materially injured by the smallness of our inclosures, and the numerous trees which grow in the hedgerows, encouraging, as they do, rabbits, and an almost infinite number of small birds, which not unfrequently take at least a tithe of a small field of wheat. The information I ask for is, What kind of fencing is at once the most *economical*, and at the same time *efficient*, as a substitute for hedges, on lands which in regular course will be brought under the plough?—R. Dutton, *Stanthorne Hall, near Middlewich, August 21st*, 1844.

◆

THE COST OF GROWING WHEAT IN ENGLAND.

Much controversy is at present afloat respecting the cost of production in Britain of wheat. Lord Ducie having in the course of a speech some time ago asserted that, upon his example farm in Gloucestershire he had grown, or could grow, wheat at 28s. per quarter, or 3s. 6d. per bushel, many practical farmers have written to various newspapers, contradicting and disproving his Lordship's statement. We are of those who wish that wheat *could* be grown at that price, and at the same time afford a fair return to the tenant farmer for the capital, and for the labour, care, and skill employed in the production of it; but we are also of those who see no prospect of so desirable a consummation; we see, in the climate of these Islands—in the density of their population—in the value of land and of labour—and in the habits of the people, abundant reason to fear that the risk of the seasons—the habits of the people, inducing a necessity for high wages, and the great and increasing numbers of them, inducing a demand, and consequently a high price, for land, will effectually, most effectually, prevent the realization of what we so anxiously desire, viz., that the price of wheat be *such that our foreign* competitors cannot undersell us, and that we may sow with the confident anticipation that we shall have for our grain crops such a market as shall, in a steady remunerative price, ensure a fair and adequate return. It is not so much whether, according to Mr. Jonas who writes in the *Morning Post*, Lord Ducie's wheat costs his lordship 10s. 6d. per bushel instead of 3s. 6d., as whether there is any probable chance, *by any means whatever*, of competing successfully in price with the foreign grower.

The argument on one side we take to be this; get your land drained and into a high state of cultivation, and your crops will be such as, with a fair rent, will enable you to meet the foreign grower successfully, he having the cost of freight and other shipping charges upon his grain; and on the other side, we have attempted, very feebly, to put forward what appears to us the reply. Any rent, however moderate, if the season is bad, will, under a direct competition, be too much for the British grower, and no reduction of wages, which will at the same time afford the labourer his usual comforts, can, under the same circumstances, advantage the farmer, if the rent and rates be not also reduced.—S.

◆

THE GROWTH OF TURNIPS

UPON LIGHT LAND.

A Prize Essay of the Yorkshire Agricultural Society in 1839, *with additional notes since added by the Essayist.*

It is generally supposed, that the cultivation of turnips as a field crop, was introduced into Norfolk by Lord Townshend; but there is evidence that they were known as such, some time before the date assigned for their introduction. They are mentioned in Houghton's Collection of Papers, vol. 1, p. 213, as food for sheep, in 1684; and therefore must have been cultivated before being brought into more public use by Lord nend. Since that period, consider- provements in their cultivation have place, and a great variety of very soils have been made capable of g considerable crops, by judicious ement, and proper selection of ma- Upon the whole, however, there can loubt that the turnips, as a field crop, leteriorated. Partaking of that in- e law, which every agriculturist has end with, the constant repetition of p upon the same soil, produces more of defective vegetation. The turnip ly does not grow so vigorously, nor lily, as it did several years ago,—is ; to more diseases, and requires more cultivation, and more stimulating es, than were formerly necessary. however, is an evil to which every more or less subject; and beyond cautions of change of seed, careful tion of manure to the wants of the d attentive cultivation, nothing can e in the present state of our know- f vegetable economy.

the value and importance of the crop, it is unnecessary to expatiate. ly does it enable the farmer to sup- consumer with provisions during ter, instead of the salted food upon our ancestors had almost exclusively nd; but also, while it supplies the f a fallow, it imparts to the land a of fertility which ensures, under management, a succession of crops, following years of the rotation. It ed the sheet-anchor of light soil tion, and the basis of the alternate of husbandry, to which every class community is so much indebted.

the Yorkshire Agricultural Society ered a premium for a report on the ation of turnips on strong soils, the of this will confine his attention ly to light soils; and to these his ce and observation have been ex- ely confined. Of these there are l varieties, which *are important to* the cultivator; as sandy and gravelly, calcareous and peaty; and in every case, the writer supposes, that be the soil of whatever character it may, it is made sufficiently dry, if not naturally so, by previous draining. To attempt to secure a crop of turnips on a soil not thoroughly drained, is a mere waste of capital and labour.

Preparation of the Soil.—Turnips generally succeed a crop of wheat. In some cases, on very poor soils, the clover leys are broken up for turnips; and on others, a crop of winter tares, either mown or depastured, are taken off between the wheat crop and ploughing for turnips. As a regular system, the former cannot be pursued; for the frequent recurrence of the turnip and clover crops, would operate injuriously, and defeat the object of the cultivator; and the latter is only applicable to soils quite free from root weeds, of a superior staple, or in a very high state of cultivation. In some cases, a barley crop upon a ley precedes the turnips; but experience has proved that the barley stubble is not so well adapted to the health and vigour of the turnips, as the wheat; and therefore, general practice has decided in favour of the latter.

As soon as the corn crop is secured, and the stubble freed from the remains of eatage it is desirable to have it ploughed; to subject the soil to the ameliorating influence of the sun and air, as well as the frosts of winter. The depth depends upon the character of the soil. If the soil be naturally rich, and pretty clear of root weeds, it cannot be ploughed too deep. If thin, with a sandy subsoil, it should be ploughed shallow, so as to avoid the sand; but in all cases the plough should be below the couch grass, which is usually most abundant on inferior soils, but seldom below the mould. In ordinary cases nothing more is necessary than to prevent the water from standing in any part during the winter; but where the land is intended for Swedes, an effort should be made to have it partly or entirely cleared of weeds before the winter. In this case it should be ridged up for the winter.*

When the land is free from weeds, the cross-ploughing may be begun, as soon as the dryness will admit of it. It may take place in February with advantage; inasmuch as it exposes a new and more extensive surface to the action of the frosts which generally succeed. If allowed to remain a month or two longer, it may advantageously be crossed with Finlayson's harrow. Where the couch grass, however, is abundant, it is positively injurious to cross-plough early, as the operation breaks the roots, and renders the clearing of the land afterwards, tedious and difficult. Where they are very abundant, the operation should be delayed until the soil is dry; even if it should be the latter end of April, or the beginning of May; more will be effected by one ploughing in this case, than by two under different circumstances.†

When the dryness admits of it, usually in two or three days, the crossed land should be harrowed; first with the patent or hinge harrows, and subsequently with the common loose harrows, which separate the rubbish more effectually from the soil; and then the weeds should be raked off, which is generally performed by women.

As soon as the couch roots, &c., are cleared off, either by carting into large, or burning in small heaps,§ the land may be dragged with Finlayson's, or any approv drag; and the same course followed alt nately, so long as any roots remain. Wh they are unable to rake them off, th should be hand gathered; and no dep dance whatever should be placed on t destruction of any by the sun's rays, un the 25th of June; a time when, on m soils, the sowing should be concluded. is desirable that the land should lay a w or ten days before the last ploughing given to it; as it admits of the germina of such seeds of weeds as may be lay dormant in the soil, and is likewise fav able to the accumulation of moisture i dry season. The turnip seed should sown immediately, however, after the l ploughing.

Manure.—In treating of the manures w which the turnips should be dressed, fa yard manure stands the foremost; bec it is what every farmer possesses; and, w the exception of the calcareous soils in East Riding of Yorkshire, is almost inv ably employed in the cultivation of tur In general it never will, and never ca superseded; and though every deferen due to the practical knowledge of East Riding farmers, there can be no do that if their straw were *more carefully* m *into manure*, and applied to the turnip ca in conjunction with bones, it would decidedly advantageous. It is unneces to say that house-made manure, and fattening cattle, especially such as consuming artificial food, is the best; that of horses, cows, pigs, &c., should mixed as intimately as possible, the character of horses' dung neutralizing coldness of that of the cow, and *vice vers* It is desirable to cart this mixture to fields intended for turnips in January, February, during the frost, and at s other times as convenience may dict

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*Perhaps in *all cases* the very best plan is, by the use of some of the cultivators since introduced, as Finlayson's improved harrow, Ducie's drag, &c. to commence clearing the moment the stubbles are freed, and carry it on as long as the weather will permit.

†It is by far the best to commence with the cultivators before ploughing. The weeds lay near the top, and ought not to be buried by the plough in order to be worked up again; when freed from these all dry soils should be ploughed deep as possible.

§The writer's opinion has quite altered as to burning; there is as much propriety in setting *fire to a straw stalk*, as to the couch obtained *from the land; it ought* to be rotted into manure.

* A manure made of couch watered w dunghill drainings, or tank liquor to haste decomposition, makes one of the very best manures, to be used in the subsequent yea

earlier the better. After the first
tation is over—which should be pro-
by laying the manure as light as
e—it should be turned over; the
f the mixen being carefully turned
e middle; and if necessary, a second
may take place before June; but it
e performed in wet weather, or it will
watering. Without entering in
lar into the much disputed question
fermentation of dung being useful
rwise, thus much every farmer will
ell the truth of, that on *light soils*,
turnips, well rotted dung is indis-
le, where it is used at all. When
tation is progressing so fast as to
destructive heat, or mouldiness, it
e checked by treading the mixen,
vering it with soil; and when it is
h, it may be excited by turning and
g.

andy or gravelly soils, farm-yard
is an almost necessary ingredient
ucing a crop of turnips. The rapid
osition of vegetable matter, which
place on such soils, requires that
hould be a supply for that succulent
nd as before stated, there can be no
f its utility to calcareous soils, but
y descriptions, where there is abun-
f vegetable matter, it is less useful.
tate in which it should be applied
oil, is that in which it can be cut
pade. If it be less adhesive, it will
nd fiberous, and less available to
nts of the infant plant. If it be
to go beyond this stage, its waste
ulable, and its nutritious properties
evaporate. Hence it is not eco-
to use exclusively year-old manure,
ircumstances admit of a thorough
tion during the spring, excepting
les, which require it, owing to the
ility of sufficiently fermenting
ade manure for that variety of

ime for laying on the manure,
n the method *of sowing adopted*, and clearness of the land from weeds. If the plough drill be used, it is desirable to immediately precede the plough; if the Norfolk or large drill, it is better to lay it on a week or two before sowing, to allow it to mix intimately with the soil; especially if other manure is intended to be used, and the soil pretty free from weeds. The quantity to be applied, will vary with circumstances; twelve to fourteen tons per acre, may be stated as an average, and more if the soil be poor, and no other manure intended; while less may be used, in proportion as other manures are applied.

Lime stands next in importance, as a dressing. The object of all manure, is to supply some deficiency, remedy some mechanical inconvenience, or correct some detrimental agent in the soil. When dung, for instance, has been applied for several successive crops, a quantity of undecomposed vegetable matter accumulates, which the natural soluble properties of the soil cannot dissolve, and it remains inert. A dose of lime will correct this, and bring every particle of such inert matter, with which it comes in contact, available as food to the plants. It also assists in the intimate pulverization of the soil, as well as corrects any acidity which may exist in it, from causes which the agriculturist can seldom foresee, nor correct, except by its use. It is also destructive to weeds in the soil, and hence exceedingly valuable; for every farmer knows that weeds being indigenous, are much more ready to grow in the soil, than his crops, which are artificial, and often exotic. For peaty soils, an occasional dressing of *quick* lime is invaluable, especially if there is an addition of clay, road scrapings, &c. to give the requisite firmness to the soil. It should be laid on as soon as convenient after bringing from the kiln, and in as hot a state as possible. The time for laying on lime is a few weeks before the sowing, in order that the subsequent ploughings may mix it thoroughly with the *soil*, and thus its effects be more immediate after the sowing. The quantity per acre, entirely depends upon the character of the lime, in the locality. Two to four chaldrons per acre are used, but as it is applied for turnips, generally in conjunction with other fertilizers, the former may be stated as the better quantity. If dung is also applied, they should be used at as great a distance of time between each other, as circumstances will admit of, and the latter not long before the sowing.

Bones, form one of the most valuable manures for turnips on all light soils, on account of their portable and stimulating character; they are least useful on a gravelly or loamy soil. They have converted moorlands into rich fertile and productive farms, luxurating in every valuable product of the earth. Their value is beyond all praise. The East Riding of Yorkshire affords a specimen of what they have effected; and they require only to be known to be extensively applied. In many cases they are used alone; in others, in conjunction with farm-yard manure, with ashes, and with lime. Ashes are sometimes drilled with them as a substitute, by diminishing the quantity of the bones. Lime is a valuable auxiliary, on "old going land," or soil which has been long under cultivation.* On peaty soils, having a substratum of sand, they have produced wonderful crops by supplying them with the necessary animal matter. The quantity varies from twelve to thirty bushels per acre. Sixteen bushels per acre will produce a fair crop, on average soils; and some farmers say that more than that quantity is waste. It is not desirable to mix them with ashes, when they are drilled in the above quantity. English bones are generally preferred to foreign; but from experiments made by the writer, he prefers foreign to English, and also to
recent bones ; for although the latter h
more of their juices than the former,
former sooner decompose ; and the fat
animal juices require considerable che
changes, before they are available as f
for the plants. A mixture might be j
cious, but he has not tried it, nor i
aware of the trial having been made.

Other manures of a miscellaneous c
racter are used for turnips. Pigeon's d
is most valuable; rape dust has b
used successfully. Animalised carbon
also been used advantageously. Six
bushels per acre, when drilled, is the q
tity generally applied. Malt culms
useful as a top dressing. Guano in a
season may now be added to the li
useful fertilizers.

(To be continued.)

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THE HARVESTING OF CORN.

At the third monthly meeting of
Stratford-on-Avon Farmers' Club,
Sargeant read an essay on "The Har
ing of Corn."

Mr. S. observed that the state o
weather, in some cases, might justify
in commencing harvest, but tho
advisable to cut corn before being
ripe. He enumerated many adv
derived by adopting this method.
regular farm labourers can cut a g
portion of the crop before it is too
the loss from shedding and break
much decreased, if not altogether av
Bad weather is less likely to affect
when got in this way than if it was al
to remain until fully ripe; the inc
value of the straw, &c. &c. In supp
his assertions he quoted from an
article, written by Mr. Hannam;*
recommended "setting" or contracti
the work, it being more likely to give
faction, both to the employer and empl

Amongst the instruments used for cu
corn, the scythe and sickle, however
tered and improved, had retained
names for ages; but the great imp
ments in agricultural mechanics stre
ened his opinion that modern mach
would tend to lighten this departme
manual labour. The sickle, he ack
ledged, was well adapted to the pur

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* Subsequent observation and experience has induced the writer to alter his opinion entirely on the application of bones in the same season *as lime; it sets free the ammonia in the bones and almost ruins them.*

* Vide Farmers' Herald, Vol. I, p. 4.

nded, but the scythe had many recom-
dations :—first, expedition; second,
ring a greater length of straw, an
ortant object, particularly this season;
d, its general use in Scotland and some
ur eastern counties. There were ob-
ions raised to its use, but he considered
visionary, and others counterbalanced
the increase in the crop, &c.; and, if
fully used, its finished appearance is far
re any other operation. If it is objected
mowing wheat, why not barley and
s!

y mowing stubble was done away with,
with it, the expense of carting, &c.,
; besides its being almost valueless as
ure, from its exposure to alternations
weather; he did not recommend the
criminate use of the scythe, for much
s utility would be lost unless the crop
thrashed by machinery.

le described the method of making and
ding the sheaves; he suggested two or
e reaps placed, not too tight, in each
d, and said, without fear of contradic-
, that sheaves put up in this way get
condition quicker, and stand the
ther better. In binding, use no more
ws for the band than is necessary, and
heaf securely but not tightly bound.

le descanted on the modes and instru-
ts used in cutting barley and oats,
much information on the various
ds adopted, the manner of carting,
and thatching. Under this lat-
, he recommended permanently
ed roofs, fixed on pillars twelve feet
, and twelve by twenty feet from each
, the length to be guided by size of
, to place the corn under; and after it
ashed, to put the straw intended to be
rved. Such a building as this would
essential service to the small occupier
lace his hay under, when it is con-
ed in small quantities.

a conversation that followed, a remark
made that it is impossible to define
n corn should be cut, but, as a general
, when it is white one foot from the
nd, it is ripe enough; so opinions were
ressed. Touching the methods of mow-
to or from the standing grain, and both
s show advantages, a member had
ved his crops for some years, and only
one objection, "the litter it made,"
ch is easily obviated by attention on the
t of the farmer, and dexterity on that of
men. We regret not having space to
this very excellent essay. The subject
n which it treats, and the attention which it merits command consideration from every one, and we hope to hear of its being adopted by every agriculturist: it was listened to with much attention, and elicited the warm approbation of the members at its termination.

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YORKSHIRE AGRICULTURAL SOCIETY.

At the late annual meeting of the Yorkshire Agricultural Society, held at Richmond, a discussion on the comparative value of the several methods of draining took place, but ended, as such discussions very frequently do, in the Society coming to no practical decision upon the subject. We do not blame, therefore, either the gentleman who introduced or those who took part in this discussion; it was just one of those subjects upon which practical men can come to no positive conclusion. One has had experience in one description of soil, and another in a totally different, although commonly bearing the same name. One clay is perfectly impervious to water, whilst another has sand beds and gravelly veins, which will admit the water into the deepest drain: in the one case, therefore, if a drain be cut deep into the clay and the tiles closely covered with it (being impervious) by what means *can* the water find its way underneath the shell; in the other case, a percolation will take place, not only from the sides of the drain but through the tiles themselves. It is impossible, therefore, to apply a general rule to all soils in draining any more than tilling or cropping. We remark, however, with pleasure, the following on the cost of drain tiles, which fell from M. C. Salvin, Esq., of Burnhall, near Durham :—

> "He had, in a small way, proved to his own satisfaction that a reduction in the cost of draining could be effected. He had drained ten acres of land in the county of Durham, at the rate of 40s. an acre, the drains on an average being from 18 to 20 feet apart, and about 24 inches deep. Seeing the condition in which poor farmers were placed, then he held that it was the duty of the landlord to assist them in

draining their land, in erecting tile-sheds and so on. The question then came as to how the drainage of land was to be carried out. Now, he went to Kent to find this out, and he there found a gentleman who had had a crop previously to draining the land of 24 bushels an acre, and after he had drained the land, he had declared to him that he would refuse 40 bushels for what he (Mr Salvin) then saw growing. He had searched further into this subject in Essex, and he found that where tile draining was introduced, the results had been most miraculous. But to come nearer home he might observe that the present High-Sheriff of this county, had a tenant of the name of Hunter, who had produced the same effects on land scarce worth 5s. an acre. At what price these tiles could be made a great many calculations had been arrived at, but from what he had seen, he could prove that tiles could be made on their own premises at the rate of 5s. a thousand, provided their fuel did not cost them more than 3s. or 4s. a ton."

Of a satisfactory nature also was the communication made by Mr. Crompton on the subject of liquid manure. The following is a condensation of Mr C.'s address :—

"He said he had, within the last ten years, made four tanks—three on his own estate, and the fourth he had superintended upon that of his brother. The first he had made was a small one, and he would impress upon all making any hereafter to have them constructed large enough and adequate to the quantity of manure made on their farms in a year. The first he made contained forty cubic yards of liquid, but he had enlarged it to 150, which was filled three times a year by the produce of his farm. He was satisfied from his experience that this was a very simple and saving mode of management, and thirty cubic yards of the liquid manure applied to one acre of land would cause it to produce as heavy a crop as any other manure which could be placed upon it. He had first been led to make an experiment of the sort from seeing published in the Transactions of this Society an account of the experiments which had been made by the noble chairman with farm-yard manure and nitrate of soda. The noble lord had tried these on a plot of land of certain extent, and he (Mr. C.) had tried the liquid manure on a piece of land of the same extent; but the produce he derived from it was nearly double that his lordship had derived by applying the common manure. The expense to which his lordship had gone was, he understood, 35s.; but the expense to which he (Mr. C.) had been put was merely the services of a horse and cart for *almost a whole day*. With the manure which flowed into the tank on his farm he c
nure twelve acres, and this land produ
crops of grass which he had mowed tl
and then there was an abundance whi
mowed late in the season and gave to
This he had found to be the case
which had not been pastured for nine
always been mown. It had been urg
these tanks that they were unsightly
healthy, but in the course of his ob
he had noticed nothing objectionable
that way; and though in hot weather i
looked over the tank he would perceiv
pleasant vapour, yet if he stood a ya
away from it he would no longer find
sensation; showing that the effluvia ro
from the tank into the air, and on no
when his workmen had been engaged
ing this manure, had he been aware tl
them had suffered from the injurio
which arose from the properties of the
the tank. He argued, therefore, that
nothing affecting vitality in the deposit
tanks. He had tried the liquid ma
years ago on seeds. He had a tank in
dle of summer so full that he did
where to put it. He, however, distrib
grass in full meadow. The effect on
was astonishing. In three weeks they
perpendicular from the other seeds
tinued so to grow, and could not be ke
next year the grass was very strong
this was not on clayey land; so that
on a light soil would no doubt be n
cessful."

We are glad to find, from the p
press, that the success of the meet
attributable, in a great degree, to t
fatigable exertions of the talented
to the society, M. M. Milburn, Es

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DARLINGTON FARMERS'

THE Darlington Farmers' Club he
monthly meeting on the 19th of A
the offices of Mr. Thos. Dixon, lan
their honorary secretary, when the
very good attendance of members
The subject under discussion was '
time for reaping Wheat and other C
the best and most profitable mode c
and securing it." Henry Chapma
the chairman, introduced the subj
said that having formerly himself
pretty extensive farmer for a goo
years, more particularly in Derbys

ntly, in his practice, had oppor-
f observing the cutting and har-
f wheat under different circum-
nd he was decidedly in favour of
heat before being fully ripe, as
ieans a finer sample is obtained,
is the crop being cut with less
it although he was an advocate
g wheat before being fully ripe,
l not recommend cutting it very
although a brighter sample was
yet he was strongly of opinion
lded a less quantity of flour; but
g himself made any experiments
f this position, he merely gave it
pinion.—The Secretary then said
the experience he had had he
d it judicious to cut wheat a little
an what had been generally prac-
by that means not only is a
ind better sample obtained, but if
is broken down, as is sometimes
it could be cut up much cleaner
state than if fully ripe; the straw
a better quality, and in a wet har-
i the corn and straw stand the
much better than when cut ripe;
pport of this position he mentioned
mstance of the wheat on the farm,
he was resident, in the wet and
harvest of 1816, being cut in a
state, and the consequence was,
m all the neighbouring farmers'
as completely sprouted in the stook
long continued wet weather, the
n this farm was comparatively
and in the succeeding winter and
when other farmers of the neigh-
d sold their wheat in the Darling-
ket at 22s. per boll, the wheat from
i sold for 28s. per boll; and he be-
iat the principal, if not the only
was the wheat on this farm having
at a much earlier stage of ripeness
rest of the neighbourhood. He
d some extracts from the *Quarterly
of Agriculture*,* detailing some experiments made by Mr. J. Hannam, of North Deighton, near Wetherby, by which it was clearly shewn that it was injurious to allow wheat to stand until fully ripe before cutting, and that the best period for cutting wheat was from ten to fourteen days before fully ripe. An animated discussion ensued both as to the proper period for reaping, and the best mode of cutting and securing the crop; and several members considered hooding the stooks of great service in securing the grain from the ill effects of the weather, whilst on the other hand several others were of opinion that if properly stooked it was as well without hooding; consequently, in the absence of any practical proof of its advantage, no conclusion could be come to in that respect: and as to the best mode of reaping, it having been up to this time almost the universal practice in this neighbourhood to cut wheat with the sickle, there was no advocates for deviating from the old practice; but as regarded the proper period for reaping, the members present were unanimous in opinion that it is best to cut wheat in a rather raw state, perhaps a week at least before being fully ripe.

The subject fixed for discussion at the next monthly meeting of the club, on the 16th September, is "*Wheat Sowing, with the preparation of the Land and Seed, and the proper time for sowing.*"

◆

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

THE Annual Show of this society was held at Glasgow, on the 8th of August. On the 7th the general committee met for the purpose of completing the arrangements. Lord Eglinton in the chair. Sir C. Gordon laid on the table the society's new medal, and stated that the entries of stock were larger than on any previous occasion.

The total number of lots was 1404, amongst which were 222 Ayrshire cattle, 55 West Highland cattle, 160 horses, 118 sheep, 187 lots of butter, 83 lots of cheese, and 176 im-

Vide Farmers' Herald, Vol. I, p. 4.

plements; and the largest number ever entered before was 1014, at Edinburgh, in 1842.

At the general committee dinner in the evening, Mr. Campbell, of Craigie, made, in the course of his speech proposing the Royal Agricultural Society of England, the following observations in reference to guano "that perhaps, on this occasion, he might be permitted, as a practical man, to take exception to a statement made by Dr. Buckland, that guano would not produce two crops. This was a matter of such importance, that in throwing doubts on the subject, Dr. B. was bound to state his reasons. His own practice led him to think that Dr. B. was wrong. The year before last he had a crop of Swedish turnips on land manured with guano, and last year, after them, a most exellent crop of wheat; but it was to be observed, that the shaws of the turnips were turned in. Dr. Buckland might be able to tell the meaning of this; but, at any rate, he would defy any man to show a better crop of turnips and of wheat than he had in these two years, so that he found, practically, two crops could be got off guano." And Professor Johnston remarked on the same subject in returning thanks on behalf of the Agricultural Chemistry Association of Scotland, that "from England they often saw reports as to the adulteration of guano and other manures, while in Scotland there had been no quantity of guano worth speaking of adulterated. This showed the moral effect of such an association as he represented; and they might depend upon it, that if adulteration was attempted, it would very soon be discovered."

On the 8th the shew took place on Glasgow-green, the day was for the most part wet and unpropitious, notwithstanding which, however, the attendance was very numerous. We congratulate the county of Chester upon the success which attended the Stretton blood, in the cow shewed by *Sir Thomas* de Trafford, which was bred
by Messrs. Forrest, who were not
ever, themselves exhibitors upon th
sent occasion. In the *Ayrshire* br
bulls and 99 Cows were shewn, an
a very even lot. The west highl
produced some remarkable specim
their excellent breed; the short legs
animals seeming scarcely able to carr
thick round and heavy bodies. Some
of this breed belonging to his Gr
Sutherland travelled 350 miles to the
In every respect the meeting was w
of the great society which called it
ther and of the important city where i

ROYAL AGRICULTURAL IMPR MENT SOCIETY OF IRELAN

The show of this society for the p
year was held in Dublin on the 15th
The cattle generally were not eith
number or qualifications, such as w
pected, although there were many
beasts. Much of this deficiency was d
less caused by the unfortunate preva
of the distemper, but much more, we
by the classification which the Societ
parting from the track that has led to
happy results in other societies, has s
out for itself. The novel distinctio
"Pure and distinct breeds of catt
breeding purposes," and of "Pure an
tinct breeds for fattening purposes,"
not understood by the breeders: up t
time the effort has been to produce an
possessing both qualities in the highes
gree of perfection; and being now, fo
first time, called upon to produce pur
distinct breeds for each purpose, an
in ignorance as to the meaning of the
of competition, no wonder they shoul
fuse to send forward their animal
having sent them, find that they
better have kept them at home.

The competition in sheep was b
means extensive, nor were the lots, i
dually, with some exceptions, equal
pectations.

horse class contained a few fine , and may be characterized as res- e. And, as regards swine, we have greater number, with few excep- f superior animals at many provin- ws.

exhibition was really excellent of ural implements.

echanical invention, evident effici- d workmanship, nothing which we er before seen could be compared mplements offered for competition Scottish manufacturers,—Wilkie, nd Grey.—As general collections, xhibited by Messrs. Drummond, n, Courtney, Stephens, Lestrange, ck, Murphy, Paul, and Vincent, ost creditable; and Mr. Robinson's rn, churning and steaming apparae admired. Etheredge's drain-tile machine attracted much notice; it lated to confer a great boon on the rs of clay land, where stones for g are difficult to be obtained.

Council dinner and the banquet merously and respectably attended.

◆

ERS' CLUB HOUSE, LONDON.

ub has arranged for monthly meet- its members for the purpose of dis- practical agricultural questions. etings are to be held on the first y evening in each month, at five in winter, and six in summer.

the rules laid down for the conduct meetings we find—

t the presidents and secretaries of agri- societies, and the chairmen, vice chair- d secretaries of local farmers' clubs, entitled, for their year of office, to ad- as honorary members, official notice of lding such office having been received respective secretaries.

t local farmers' clubs be allowed to sug- jects of discussion for the consideration mmittee.

t written compositions on the subject of on may be read."

following are the subjects proposed ussion at the next November, De- , and January meetings, with the of the proposers:—

ember 4.—Manures—Artificial, Guano, c.,—best mode of application—descrip- crops—time of using—cost, &c.—Mr. Baker.

"*December* 2.—Draining—surface and deep.—Mr. James Smith.

"*January 6th*, 1845.—Architecture—on the importance and advantages of an improved style, as applied to farm buildings, both in convenience and economy.—Mr. Wm. Cheffins."

◆

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Monthly Council was held at the Society's House in Hanover-square, on the 7th August; T. Raymond Barker, Esq., in the chair.

Finances.—The chairman of the finance committee laid before the council the monthly report of the state of the funds of the society to the end of the past month; from which it appeared that the current cash balance in the hands of Messrs. Drummond at that time (including a residue of £300 on account of the subscription of £1000 received from the town of Southampton) amounted to £2858; and the capital invested in the public funds to £7700: the council, before leaving Southampton, having defrayed the expenses of the London police, amounting to £125, and placed at the disposal of the stewards and director of the yard, out of the deposit of £3308, in the hands of Messrs. Maddison and Pearce, the society's local bankers the sum of £1000 to meet the immediate claims of a miscellaneous character connected with that department. The council then proceeded to vote the discharge of the following claims, as recommended by the finance committee:—

	£
Contract for the Yards and Pavalion at Southampton (balance of account)	1751
Do. Council Dinner	405
Do. Pavilion.............	566
Prizes awarded at Southampton................	1315
Mileage, &c., to the judges of the show	354
Miscellaneous bills connected with the Southampton meeting................	60
Books for the Library	154
Binding and carriage of Journal	160
Miscellaneous bills on general account..........	286
Total	£5051

Veterinary Science.—1. *New Epidemic.*—Prof. Sewell reported to the council upon a letter referred to him at a former meeting, received from Mr. James Dixon, of White Moss-farm, Cheshire. In that communication Mr. Dixon stated that until he had adopted the treatment of bleeding his cows immediately on their being attacked with the prevailing disease (termed the "New Epidemic"), he lost several; but none had died since he had put that measure into operation. He urges at the same time, in the most strenuous manner, that particular care and caution are required to keep a continual watch over the animals, and apply the remedy at the very instant that the symptoms of the disorder make their appearance; as, on this promptness depends all the value of the measure. As soon as the symptoms are perceived, he recommends bleeding without delay.—Prof. Sewell informed the council that this was the practice he had been in the habit of recommending; and he believed that the losses which had been sustained by the owners of animals from this complaint, had arisen more from want of close attention to their condition, and to the first changes in them from health to disease, than from any other cause; and he accordingly took that opportunity of earnestly recommending Mr. Dixon's watchful care over his stock to all other farmers in general. The first principal step of bleeding having been taken in due time, Professor Sewell would recommend the administration of the usual laxative medicines, and the application of external stimulants, to be left to the judgment of the nearest practitioner.

2. *Diseases of Domestic Animals.*—Professor Sewell then reported that the examination at the Royal Veterinary College being concluded for the session, ninety-three pupils had received diplomas; several of whom had also obtained certificates as having attended the lectures and practice on cattle, sheep, and other domestic animals; in which branch of their profession he thought their services to the farmer would be better secured by Agricultural Associations and Farmer's Clubs in the country engaging them, at fixed moderate salaries, to settle in localities where they are most likely to be required. This plan had been adopted with great success on the Continent, but it was there effected as a Government measure, and had become a long established law.

3. *Rabid Animals.*—Prof. Sewell informed the council, that keeping in view the object of the Society's connection with the Veterinary College, he had decided on devoting the period of his professional recess during the present autumn to a practical inquiry into the most successful means by which the verus of rabid animals may be counteracted, and the fearful results of hydrophobia obviated.

ENGLISH SILK.—Mrs. Whitby, of Newlands, near Lymington, Hampshire, presented to the Society, at a previous meeting of the council, a specimen of the silk grown and wound off at her residence along with half a dozen of the cocoons just formed.

SOUTHAMPTON MEETING.—At a Special Council held at Southampton, on the motion of the Hon. Capt. Spencer, it was resolved,—that no castrated or spayed animals be allowed to be exhibited at the country shows of the society.

SHREWSBURY MEETING.—A general Shrewsbury committee was appointed by the council.

The thanks of the council were given for numerous communications, and it was adjourned *to* the 4th of September.

RODING LABOURERS' FRIEND SOCIETY.

WE have the pleasure to notice the announcement of the annual meeting of this meritorious society. We have frequently wished for an opportunity to draw attention to the existence of these societies, which, we feel satisfied, are the means in their respective localities of doing much good; and we shall at all times feel grateful to the secretaries or other officers of them who do us the honour to forward the particulars of the amicable contests which they provoke.

There is some difference in the premiums and general arrangement of most of the societies which aim, as the one we now notice does, at the progressive amelioration of the condition of agricultural labourers, by means in every way the best calculated to effect that important object, viz., by rendering them more industrious and more skilful in the various pursuits incident to the position in which they are placed. But there is nothing in the list forwarded us to call forth particular remark. We see no reason why every plough-man should not be able not only to use in the most effective manner that very simple implement, but to repair or even make one at a pinch, the best wooden ploughs we know of are made by a farmer's son on the Scotch pattern; and so by every other simple implement used upon a farm. A very little training in early life will ensure this. Boys in an agricultural district should be well educated in agricultural pursuits; and at the same time that they are trained, to use the words of the Roding posting bill, "in the nurture and admonition of the Lord," they should be taught the most effectual mode of doing their duty "in that state of life to which it has pleased God to call them." It gives us pleasure to see that the clergy of the several parishes are at the bottom of this good work; and if there is any one suggestion we might venture to offer them, it i this, That it go forth from the Rectory house of Margaret Roding, through th

and breadth of the district, that no
envious of the success of his neigh-
ut that, bearing his defeat as he
s stimulated by it only to fresh ex-
and that no man is puffed up by
ty, but carrying his honors meekly
all the praise to that bounteous
ce by whose aid he was sustained
the victory.

◆

WEATHER & THE CROPS.

NG the accounts received on this
rom the various districts, we are
to the conviction that the harvest
s, so far as the *condition* of the crop
rned, infinitely below an average.
ather has been, upon the whole,
he past month, anything but pro-
and heavy complaints continue to
of laid grain and heavy local rains.
places, it is true, the showers have
s frequent than in others, but in all
lland and northern counties the
will be a protracted one, unless a
soon takes place. When we use
local rains we mean to express by
act, that although a district may
good harvest day, the chances are
r 20 miles off, the work is standing
the state of the atmosphere, which
charged with moisture, if not pour-
n a deluge of water. We are free
, however, that from the southern
the accounts came away better.
adth of land under wheat, owing to
eeding time, is as great as last year,
crop as prolific; but, as we before
l, we fear its condition will not be
to warrant an early appeal to the
Spring crops are every where light,
having afforded them an oppor-
recovering the effects of the long
Of Swedish turnips there will be
none, the second and even a third
aving every where failed. Pota-
recovering, but they must of ne-
e a short crop.

Since writing the above, a favorable change has taken place in the weather, which, should it continue ten days or a fortnight, will place the harvest out of danger. There will be, however, we feel satisfied, a larger amount of light grain from sprouting, than many are aware of.—Aug. 27th.

◆

WINTER FOOD FOR DAIRY COWS.—I think some of your readers may be benefited by the knowledge of my experience with potatoes as food for cattle. I have given them in the winter with hay to cows, and straw to young cattle, with the greatest success; the latter, when fed with them, always being in good condition, and the former thriving well and giving a fair quantity of very sweet milk, producing butter of good flavour. The fact to which I wish to draw the attention of your readers is, that when potatoes are given to cattle late in the spring, with green food, they are liable to become hoven or blown. Two years ago, having a quantity of these roots when they were at a very low price in this neighbourhood, I began to give them to my cows when turned out at grass, and the conseqence was they were all blown to an alarming extent. I have always used the potatoes raw, but most probably had they been steamed, the evil in this case would have been avoided; still I do not approve of steaming roots generally for cattle, because, as far as I have had the opportunity of ascertaining, they do better on them raw. In this case I did not lose any of my cows, but had I not taken prompt measures for their relief, there is every probability that a fatal result would have ensued. Not having a probang at hand, I had them copiously bled, and drenched with three quarters of a pound of common salt each, in two quarts of water, and in the course of a few hours the swelling had entirely subsided. When cattle are hoven I much approve of bleeding, because, even when the probang has been effectually used, the loss of some blood is advisable, in order to check any inflammation caused by excessive distention of the stomach.—*A. H.*

GRASS.—Sow early in spring; Alopecurus pratensis 1½ lbs., Avena flavescens ½ lb., Dactylis glomerata 5 lbs., Festuca duriuscula 2 lbs., F. pratensis 2 lbs., Lolium perenne 12 lbs., Poa pratensis 1 lb., Medicago lupulina 1 lb., Trefolium prateum 4 lbs,, T. repens 5lbs., and Rye 1 bushel, per acre. These are the kinds and quantities recommended by Lawson as seed on light soils for permanent pastures.

GUANO.—Can any of your correspondents inform me whether they have tried Guano on leys; and if so, have they found it to destroy the slug? Supposing it efficacious in this respect, I apprehend its utility will be very much increased.—*W. Brittain, 24, North John-street, Liverpool.*

A LARGE FAMILY.—During the recent sittings in the Insolvent Debtor's Court held at Taunton, an insolvent, named Jeffries, a country farmer, residing in the neighbourhood of Bridgewater, came forward to be discharged. In the course of his examination he stated that he had a family of *twenty-one* children. The commissioner said that he did not wonder at his being insolvent.—*Bath Chronicle.*

FAIRS FOR SEPTEMBER IN NORTH WALES.—Tal-y-bont, Trefrhiew 3, Rudland 8, Bala 11, Bettws 16, Llanrwst 17, Beaumaris, Wrexham 19, Dolgelley 20, Lanfechell, Pen-machno, Pen-ystryd, Trawsfynydd 21, Llannwchllyn 22, Beddgelert 23, Pwllhely 24, Newburgh, Clynnogfawr, Penmorsa, Denbigh 25, Ffestiniog 26, Sputty 27, Llanrhiader 28, Llangerniew 29, Perthathway, Ruthin 30.

Horticulture, &c.

MILTONIA SPECTABILIS.—At the last Glasgow Horticultural Society's exhibition there was, among other well-grown specimens of plants sent by Mr. Turnbull, gardener at Bothwell Castle, a very fine one of this rare plant, about 3 feet in diameter, with some 35 expanded blossoms, and a *good* many more to open; the leaves were of a very dark green, which is also unusual with the plant.

The following cape heaths are
kinds, and may be easily procured,
Hartnelli, pink; Aristata major, red
minata longiflora, purple; Tenuiflora,
with pink shade; Inflata, white; A
ana, scarlet; Depressa, yellow; E
light purple; Cavendishii, yellow;
bilis, light purple; Retorta major,
Lamberti rosea, fiesh-coloured; Hy
purple, tipped with white; Tricolo
Linnæoides-superba, purple, with wh
Jasminiflora alba, white: and all the
ties of Ventricosa.

NOTICES OF NEW PPANTS WHIC
EITHER USEFUL OR ORNAMENTAL.—
SIA VIOLACEA. Porcelain blue H
(Greenhouse Shrub.) Cinchonaceæ.
tandria Monogynia.—The generic ch
is taken from this species and fr
closely allied Rondeletia longiflora o
misso and Schlechtendahl, which n
characterised as a second species of H
It is much to be regretted that these
should have been referred to Ron
from which they differ so much in a
ance, and from which they may be
tially distinguished by the form
corolla rather funnel-shaped than
shaped, without any callous contrac
beard at the mouth of the tube;
capsule, which (according to Chami
Schlechtendahl) separates by the s
of the dissepiment into two cocci,
are loculicidally split, and by som
minor points. Nearly the same cha
distinguish them also from Sipanea,
is quite as nearly related as Ron
though very different in habit. The
also been compared with Bouvardia,
some respects resemble the large
flowered species of that genus, bu
pendently of all minor distincti
Hindsias have the ovules and proba
seeds of the tribe of Rondeletiæ,
that of the Cinchoneæ. The
violaceæ differs from the better kn

iflora, chiefly by having much larger, ler, and more downy leaves, the flowers ı larger and more hairy, and by the , of which one, two, or three divi- are much larger than the rest, and or less dilated and leaf-like above the e. Both species vary in the size of wers, and in the shade of their colour. : H. longiflora also, and perhaps in ɔlacea the stamens are entirely in- l in the tube of the corolla in some ıens, and in others the tips of the s protrude. In the latter case the ıppears to be less prominent than in mer, so that these differences may arise probably from a degree of sexuality. For the foregoing matter we are indebted to the kindness of Mr. Bentham, who agrees with us in regarding the Rondeletia longiflora wrongly referred to the genus in which it has been placed. This Hindsia violacea is one of the finest things obtained from South Brazil. It has been imported by Messrs. Veitch and Son of Exeter, who received for it the large silver medal at the Horticultural Society's Garden Exhibition in May last. It will doubtless prove a very easily cultivated greenhouse plant; and is certainly unsurpassed in beauty by blue flowering shrubs.—*Botanical Register.*

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TEOROLOGICAL & RURAL OBSERVATIONS.—WINWICK, August, 1844.

:ather during the past month has been decidedly unfavourable to the farmer, continual ı day after day, with few exemptions, being the rule, retarding both the process of ripening operations of harvesting. Wheat is got very much down in places, and where this is the is now commenced spritting, so that alarming consequences are beginning to unfold them- if not speedily checked: with regard to this, tolerable hopes are held out now, by the appearance of the atmosphere; and, should no reaction of wet take place, all may be well. plaints are beginning to spread about rot in the potatoe crops, in both early and late varie · : appearances becoming more alarming and general as the season advances.

CALENDAR.

. Oats (avena sativa) cut	Aug. 6. Barley (hordeum sativum) cut „ Wheat harvest begun

ATMOSPHERICAL OBSERVATIONS, FROM JULY 21st to AUGUST 20th, 1844.

ATHER.	A. M.	P. M.	Even.	Days.	PREVAILING WINDS.									
					N.	N.E	E.	S.E.	S.	S.W	W	N W	Total.	
....	1	3	2	1	0	0	0	4	0	0	2	0	6	
....	13	14	15	7	1	1	1	4	4	5	15	11	42	
udy............	0	0	0	0	0	0	0	0	0	0	0	0	0	
....	17	14	14	23	1	1	1	2	6	4	14	17	45	Sun shown out A.M. 26; P.M. 26; days 27.
....	31	31	31	31	2	1	2	10	10	9	31	28	93	

FORCE OF WINDS.

FORCE.	N.	N.E	E.	S.E.	S.	S.W	W.	N.W	Total.
	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.	Ob.
ɔr gentle breeze	1	0	0	7	2	1	3	2	16
ate wind	1	1	2	3	6	7	23	25	68
breeze	0	0	0	0	2	1	4	1	8
wind	0	0	0	0	0	0	1	0	1
rce	1·5	2·0	2·0	1·3	2·0	2 0	2·09	1 96	1·93

FALL OF RAIN.

	Days.	Depth. in. dec.
From July 21st to 31st	.. 7	1·200
„ August 1st to 10th	.. 8	1·830
„ „ 11th to 20th	.. 8	1·425
Total	..23	4·555

ATMOSPHERIC PRESSURE.

	Max.	Min.	Mean.	Max.	Min.
	in.	in.	in.		July 30
res..	30·30	29·15	29·7088	July21	Aug. 6,
varia	0·40	0·00	0·1754	Aug 20	Aug.13

in.
range or greatest variation .. 1·15

TEMPERATURE.

	Max.	Min.	Mean.	Max.	Min.
	°	°	°		
Max. or Solar Tem	86·00	62·00	69·90	July 22	August 8
Min. or Lunar do.	60·00	38·00	49·48	July 24	August 11
Mean: Diurnal do.	70·50	60 50	59·53	July 23	July 30,31
Diurnal variation.	38·00	9 00	20·38	July 22	Aug. 19,20

Utmost range or greatest variation........48

wick, Aug. 27th, 1844.

Edward Rothwell.

For the Draining of Land, sewering, road-making, paving, building, and all works requiring a regularity of fall, a workman's level, invented by J. Bailey Denton, Gray's Inn Square, London. This instrument is intended to assist workmen in giving an uniform fall to drains, &c., especially in situations where the inclination of surface is slight. It is in form, a pair of compasses, the legs of which are fixed, at a distance, from each other, of 5 feet, by means of a cross bar. From the apex is suspended a plumb, and in one leg there is fixed a sliding sight and vernier, while on the other there are cross hairs. By means of these, any person, however uninitiated in the practice of levelling, may obtain the fall per 5 feet, with an accuracy equal to the spirit level, and without any difficulty in adjustment. To use this instrument properly a person has only to send forward, to the spot where it is intended to briug out the drain, a stick with a paper fixed in it the exact height of the line of sight in the instrument from the ground level; he then, with the instrument adjusted by the plumb to a true level, raises or depresses the sliding sight in one leg until the cross hairs in the other cut the paper in the stick. From the vernier he will read the rise or fall, (per 5 feet,) which will enable him to set the shifting limb to a corresponding division in the index on the bar to which the workmen will afterwards work the plumb line. When folded it forms a 5-feet staff. The problem from which this simple result is deduced is explained by diagram in Mr. Bailey Denton's work on model mapping.

Reviews, &c.

Quarterly Journal of Agriculture, &c. No 5. Blackwood and Sons, Edinburgh and London. *(Second notice.)*

ON PUERPERAL FEVER IN THE COW.

(Continued from page 123.)

The predisposing causes then of puerperal fever in the cow Mr. Barlow states to be—

"The existence of a larger quantity of circulating fluid in the system at the time of parturition, produced constitutionally or artificially, than is required for the animal and organic functions.

"An excitability of nervous system induced *by gestation and* parturition unknown at any *other time.*

"Anything indirectly preventing a full s cretion of milk, or this directly produced b inability, inactivity, or want of tone in the udd itself to resume its functions, thus causing

"A want of lacteal secretion in proportion an existence of its elements in the system.

"The adult or full state of growth, with co siderable developement of the vascular syste and plethora, or,

"A great developement of vascular syste alone. Constipation may be a cause."

The exciting cause being of course pa turition: after noticing the *post morte* appearances of the disease, he proceeds combat the idea that constipation is th cause of it, observing:—

"Now if constipation were the sole cause this disease, why should its symptoms be totally different now from those ordinarily a companying it. Inflammation of lungs bowels, for instance, exhibits no peculiar vari tion in symptoms, whether occurring at pa turition or other times, and why should const pation? Constipation, as such, will not kill beast in six, eight, or twelve hours, as this disea frequently does; nor is it accompanied by com loss of sight, sensation, and volition, or impai ment of respiration and deglutition, but exhibi symptoms of its own with which you are conversant. This constipation I am persuad is not exclusively a cause, but almost invariab an effect, depending upon the withdrawal annihilation of nervous power, from causes a ready stated whereon healthy organic actio depend."

And relying upon the post mortem e amination for his evidence, that oppressio of the nervous tissue is the head and fro of the disease, Mr. Barlow proceeds consider the treatment:—

"Believing that the disease consists, primari and essentially, in congestion of the nervo centres, speedily terminating in effusion in the tissue—a tissue the integrity whereof more than any other immediately essential life, and yet one more than any other, from th nature of its texture, offering every facility injury likely to result from this kind of disea —it behoves us instantly and energetically apply our remedies.

"And what remedies are there possessi greater potency than blood-letting and purg tives towards an early stage, before effusion h taken place, effecting the indications desir namely, unloading the vascular system, preve ing morbid deposit and change of structu incident thereon?

"If, then, we see our patient, early before she falls, or even when recently down, with coma and other cerebral, the most obvious symptoms, the true spinal functions little or not anything impaired, in other words cerebral congestion alone existing, my first care would be to bleed instantly."

The purgatives, says Mr. B., should be most powerful:—

The formula I would advise is this:—pint and-a-half of linseed oil; croton seed in powder, one scruple; calomel, one drachm; barbadoes aloes, two ounces; powdered ginger, two ounces. The aloes should be dissolved in boiling water, to which the other ingredients are to be added, and carefully administered. In order to facilitate the operation of medicine, clysters should be frequently employed, and, if administered with the patent syringe, one end of the tube may be introduced with an arm in the rectum for a considerable distance, and a greater probability will thus be afforded of softening any hardened fæces. Clysters may be composed of soap or salt and water, with, now and then, an ounce of aloes in solution, and half a pint of oil of turpentine.

"All our endeavours, after plentiful blood-letting, should be directed towards unloading the bowels, as being inferior to no other means in acting upon the nervous system; therefore, so long as power of deglutition remains, and torpidity of the bowels continues, one-third of the above formula should be given at intervals of four to six hours; combined, as the disease advances, with ounce-doses of nitrous ether, increasing also the proportion of ginger, bearing in mind that all may fall into the paunch, where it will lie comparatively inert. In the cow we have little fear of exciting superpurgation—at least we seldom see such permanently injurious effects from that cause, as too often occur in the horse under disease.

"Diuretic medicines are frequently advised by many practitioners, a judicious use of which is proper, more especially when the disease advances, as tending, by other means, to effect the ends contemplated by blood-letting and purgatives, viz., promoting a separation of ingredients from an already vitiated circulating fluid; retention whereof, though highly injurious, the kidneys, from an imperfect performance of their functions, cease effectually to secrete.

"An external application of stimulants, in order to be of full service, should precede departure of sensation, under which circumstances they are of great utility. I consider the application of a powerful blister immediately behind the ears, extending well back and beneath them, to be a situation *wheron counter-irritation can* be applied perhaps as near the seat of disease, or, at all events, the nervous substance, as elsewhere. This may, as advised by some, be continued along the spine.

"The beast should lie upon her belly, slightly turned on one side, raised before, and the head supported with straw. Her position must be frequently changed, the teats frequently drawn, and fomentations applied to the udder. The body should be kept moderately warm. If possible, the veterinary surgeon should remain with his patient some time, watching carefully the symptoms, pulse, &c. If reaction after blood letting occurs to any extent, he will then be able to decide, timely, the propriety of its repetition. In despite of all exertions, should the symptoms progressively appear more unfavourable, we must consider whether an administration of stimulants may not be justifiable to rouse or sustain the sinking nervous powers while our other curative means take effect. When, however, as is too often the case, we are called in after congestion has passed and is supervened by effusion, denoted by the latter train of symptoms previously mentioned, our chance of success is, indeed, small; this effusion almost invariably causing, by pressure or laceration of nervous tissue, a cessation, sooner or later, of the functions dependent thereupon.

"If the power of deglutition is entirely destroyed, from a consequent liability of fluids to enter the trachea, we are not, without the stomach syringe, justified in administering any thing whatsoever; and even with this excellent auxiliary, the unfavourable aspect of collateral symptoms will forbid the attempt if left to our own discretion. Blood-letting, if resorted to now, would only hasten death. Indeed, the utmost caution is essential with respect to the propriety of blood-letting in every case where the cow has been some hours down. The system is here suffering and failing under the effects rather than the disease itself, and its sinking energies require all the support which the circulating fluid can impart. Bleeding has no effect in causing absorption of the effusion, which, being placed beyond constitutional influences, is not amenable to impressions made upon the circulation. The only remote prospect of benefit here is to inject, by means of the stomach syringe, some alcoholic stimulant to induce a condition which may justify a trial of other remedies; and cases of this kind have occurred, wherein ultimate success has resulted from such mode of practice. Half a pint of brandy or whisky and gruel may be given, at two-hour intervals, until three doses have been taken, when, should no reaction supervene, all other means are useless. After the first stage has passed and sensation is departed, the bladder, insensible to its accumulating contents, fails to act upon and expel them, until relaxation of its neck, in common with that of other sphincters, takes place, either from death or extension of disease to the true spinal system. This must always be attended to, and evacuated by the catheter, for an accumulation of urea in the system is alone sufficient to cause cerebral disease."

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The Journal of the Royal Agricultural Society of England. Part I, Vol. V. London, Murray.

Although the publication of the present number of this important work was announced previous to the appearance of our last, yet not having come to hand we could not then present our readers with the usual notice.

Whether we look at the importance of the papers contained in it, or the mode in which the various writers have executed the tasks imposed upon them, we cannot but consider the present number as a manifest improvement upon many which have preceded it.

The Prize Reports, upon the agriculture of the several counties, will, when complete, present a vast fund of information to the statesman as well as to the capitalist or the general enquirer, and if we could suggest an improvement upon the present plan of publication it would be, that they should be printed at length, and in the form of an appendix, so that they might ultimately bind together as a separate work; this arrangement would give the advantage of a more ready reference, and form a series of handsome volumes in addition to the general miscellanea of the journal itself.

We have before us reports on the farming of Essex, Cheshire, and Wiltshire, occupying 113 pages of the 306 of which the number consists. The first of these is from the pen of Mr. Baker, of Writtle, the well-known originator of the agricultural protection societies, from whose appendix we take the following condensed account of *Mr. King Viall's system on the Suffolk border:*

"*The land consists of* three varieties of soil, being for the most part heavy land, as it is called in that district—a term, by the bye, that conveys no distinct idea of the quality of a soil, being rather adapted to distinguish land which consists mostly of clay from that which consists of gravel or sand. This portion of the farm consists of a chalky clay subsoil, having a considerable quantity of marl intermixed, with a tolerably deep staple of vegetable mould (combined with the clay) lying upon the surface and is of that description of soil described in the first part of this essay. A second portion lying between the above-described land and the river is clay mixed with the alluvial deposit, and loam and gravel prevailing more or less as a subsoil, of which the surface in some degree partakes, having a deeper staple than the first described portion of the farm, it is adapted to the growth of swede turnips and mangold-wurzel. The remainder of the farm, in the proportion of about 10 acres to each hundred of arable, consists of meadow-ground liable to be flooded during winter, and some small enclosures of pasture adjoining the premises, which are situated nearly central to the farm, a hard road running through and dividing the strong clay-land from the turnip-land and belt of meadow-ground.

"The system pursued is an expensive one, and requires great activity and experience to carry it out effectually, as in addition to the management of the land, a competent knowledge of the purchase and sale of sheep and cattle is involved, which is rarely combined with superior knowledge of cultivation in one individual. The land is all adapted to the growth of wheat, beans, barley, and oats, which are the crops produced in fair proportions in each year, every part of the farm being in crop at the same time.

"To commence with the turnip-soil (or the last-described portion of the farm), the land is ploughed up as early as possible in the autumn, and receives one, two, or more ploughings, as opportunity offers. In the early part of the winter such portions as require draining are thoroughly drained with pipes of two inches' bore, having the opening heart-shaped—the widest part of which is placed downwards—upon the top of which stone is placed to about 3 inches in depth, consisting principally of small flints and pebbles, picked from the surface of the land; as soon as the land is sufficiently dry it receives two deep cross-ploughings early in the spring, is rolled and harrowed until a fine tilth is produced, and is then formed into ridges, or small stetches, 37 inches each in width, which is thus effected:—A straight furrow is first ploughed, and a double-breasted plough, is then used, having a marking instrument attached, consists of a small straight tough pole t right angles from the beam of the by means of a hook, and placed as far possible, so that it does not derange the n of the plough whilst working; at the this stick an iron is fixed exactly the f two of the intended ridges, which is d diagonally by a chain with the whip- of the horse; this, as the plough pro- narks out the next furrow, occupying e of two ridges. The work thus proceeds by a similar plough, or by the plough- ırning, who by passing his plough down lle of this space divides the stetch of 6 ches into two smaller ones of 37 inches e marker still defining the distance at ıe plough should be held; the ridges rmed, are ploughed off with four fur- each, and then every fifth ridge is drawn able the manure to be carted on without the form of the ridge. After the is carted on, at the rate of 16 loads of els each, the ridges are then ploughed furrows, leaving a small baulk in the as to divide the ridge into two spaces manure, which from being partially sed is easily spread in this double the land is then ploughed at four to each ridge, and the manure being in, is rolled and harrowed, and is again th a light roller. The turnips are then two rows upon each ridge 11 inches the rate of 4 pints to the acre, thus at alternate spaces of 11 inches and es between the rows. As soon as the appear, they are singled out by boys ıen at 15 inches apart, and are left diagonally with each other; they are efully and deeply hoed with a heavy the furrows are kept clean with the e, but the turnips are invariably set out and never by the hoe, the deep hoeing iven being considered a main point in em over and above that pursued with mon light turnip-hoe: and the singling is assisted by a small measured stick s in length, enabling the children em- o set the turnips out regularly and ly, so that when finished they stand ∴

he months of November and December ps are all pulled, avoiding the use of cutting instruments for trimming them, ringing off the tops and dislodging the portion of the earth attached to the ithout cutting them. The turnips are ted to the respective fields where they equired for winter use, and one moiety is left in the field for using there; those at into heaps of about 40 bushels each, are thatched over with straw, and the earth shovelled up and placed round the heaps to the top, which ends in a point. Those taken from the field are carted to the headlands of other fields where they will be required, which are principally those upon which wheat was grown in the preceding year after clover. The old hurdles used for folding are then selected for this purpose; one is placed first at the end across the space to be occupied by the turnips, and two more are put at right angles, forming a space made by the double row of hurdles, in which the turnips are placed, taking care to cart them when dry, and adding more hurdles lengthwise until sufficient space is obtained, and the turnips are disposed of in rows about 7 feet wide and 4 feet in height. The turnips are then protected by the earth being dug up and placed on both sides, leaving air-holes at about 4 or 5 feet distance, level with the surface of the land, which may be formed as the work proceeds by introducing small faggots tied loosely, or by any other mode, leaving the sides of the whole open so as freely to admit air, and extending across from side to side which is of especial importance towards the preservation of the turnips, as they might otherwise get into active fermentation, which when it takes place frequently destroys the greater part of them. The top of the heap is then covered with barley-straw and thatched, and thus the turnips are preserved from injury by frost and game during the most severe weather, and will remain in excellent condition until May following, very little impaired by keeping. The application of them is by feeding them upon the eddishes, and upon the land upon which they are grown by sheep in fold. The turnips are all sliced, and the sheep are regularly fed in troughs, having a new fold every day, and with from ½lb to 1lb. each of oil-cake per day. The sheep, for the most part, consist of lambs of the last year, and cost from 16s. to 20s. each—these in the following spring are shorn and sent to market, and produce from 30s. to 32s. each; the fleeces from the half-bred Leicesters weighing each about 6½lbs., and selling from 12d. to 16d. per ℔.

"Mangold-wurzel is grown upon the clay-land; the method of cultivating, elsewhere adverted to, (with one exception, that of growing upon 3-feet ridges) is carried out upon this farm, and the roots are used in conjunction with the turnips in the manner above stated, being all sliced and fed in troughs, and the quantity increased as the season advances, and the turnips become diminished. It is by this management that the land is maintained in a condition to produce crops without clear summer fallowing, and the hoeing becomes thus an important item in the farm management and expenditure, which, from being well carried out upon this farm, I shall advert to particularly. Gangs of boys from ten to fifteen years of age are constantly employed, at wages from 4d. to 8d. each per day; with every ten or more boys a man is placed who is made responsible for their properly executing the work, and also for their application. Narrow hoes are used in preference to wide ones. The wheat, beans, and peas first receive attention, and are all thoroughly hoed and weeded at a cost of about 3s. to 4s. per acre; the boys also dibble in the mangold-seed, and single the plants of both that and the turnips ready for the hoe, weed all the Lent corn, each being furnished with a glove, and then assist in making the hay, shaking it out with their hands without using forks; the smallest are then released for the month of harvest to follow gleaning, and the largest are all kept to various work, such as hoeing and cleaning the turnips, and assisting in the harvest-work as required, but always accompanied by the man. As the season advances, the pulling and carting of the turnips again occupies them, and it is only during the depth of winter that the smallest are not employed. Frequently two or three gangs of from ten to fifteen in each gang are at work; the light hoeing is thus executed at a less cost than could be effected by men, and the boys are at the same time taught early to work and to become industrious. The system pursued as regards the corn-crops is as follows:—The land from which the turnips were taken, after having been folded with sheep, is immediately ploughed provided the weather is dry enough, and remains until the following spring, when it is scarified and drilled with barley. The eddishes to which the turnips have been carted are also folded over with sheep, and are ploughed early and drilled with oats. The land sown with barley is also sown with clover-seed by a machine of peculiar construction, but admirably adapted. In the following year the land that had been in oats is ploughed two or three times in the autumn, and formed into 3-feet ridges, as before described for turnips, manured and drilled with beans, three rows upon each ridge; these are well hoed during the summer. The clover succeeding the barley is reserved for hay, or fed until the middle of May, and both white and red varieties are then carefully weeded, rolled, and left for seed. The land in beans is in the next year drilled with wheat or barley, and that in clover is drilled with wheat. In the fourth year that portion of the wheat succeeding the clover is folded upon again with turnips as before, and in the succeeding year is sown again *with oats; and* that portion succeeding the *beans is fallowed, and* sown with mangold-wurzel and swede turnips. Thus a continual system of labour is kept up, occupying at the rate of six men to each 100 acres, with boys in addition at the rate of two men more: excellent crops are thus produced, the wheat averaging upwards of 4 quarters, the beans upwards of 5 quarters, the barley 6 quarters, and the oats 7 to 8 quarters per acre. The produce of the clover in seed also forms an important item in the returns, and gives a vast deal of employment in the winter-months; it is about 4 bushels of red and 6 bushels of white clover per acre. The neat stock consists of cows, which are used for dairy purposes, are fed upon grass in summer and oil cake in winter, which is given in the cow-stalls three times in the day; those not in milk eat the blades of turnips occasionally, but the turnips are principally expended with the sheep.

"The horses are of the light Suffolk breed, and fed in the summer upon grass, clover, and tares, and in the winter upon cut chaff or hay, and oats at the rate of 2 bushels to each horse throughout the whole year, with 2 trusses or 1 cwt. of hay each in the winter.

"A considerable quantity of artificial manure is also used. Guano is most approved. Ground bones are also used, as well as rape-cake, and the kiln-dust from the malt-kilns, which is drilled between the barley.

"A system prevails upon this farm, as well as upon other portions of the county, of applying the white chalk clay as a fertilizer to the surface: this is dug from pits, and upon fresh ploughed land has a very beneficial effect, acting as the chalk does upon the strong clay-lands, and tending towards the production of excellent crops, especially of wheat and barley."

Mr. Baker reports wages to average 10s. per week; rent 25s. per acre; tithes a little below 6s.; poor rates* 3s. 6d.; highway's 10d., and church rates 2d. per acre. Cottage rents are high, varying from £3. to £5. per annum. The cost of raising a turnip crop he estimates at £8 7s.; bean ditto £3 2s. 9d.; wheat, of which the average production is 30 bush. per acre, independently of seed and tillage, costs, hand-hoeing, 4s. per acre; harvesting 12s.; thrashing by hand, 2s. 6d. to 3s. 6d. per quarter, and binding straw 1s. to 1s. 6d. per load of 36 trusses, 36 lbs. to the truss.

From Colonel le Couteur's paper, No. II,

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* Including county and police rates.

Jersey, misnamed Alderney Cow,"
the following extract:—

ce is miscalled "Alderney," as far
in question; for about seventy years
Dumaresq of St. Peter's, afterwards
magistrate, sent some of the best
to his father-in-law, the then pro-
Alderney; so that the Jersey was
hat period an improved, and superior
rney, race. It has since been vastly
n form, and generally so in various
hough the best of those recorded at
gave as much milk and butter as
y do now.

ars have elapsed since the attempt
nade by fixed rules to improve the
quality of the Jersey cow. A few
presided over by the then Lieutenant
Major-General Thornton, selected
l cows, with the best qualities, as
ne of these was held to be perfect in
nd fore-quarters; the other equally
ind-quarters. From these two the
oints were laid down to be the rule
g the judges in all the cattle-shows
y Agricultural Society.

uracy of this arrangement is proved
that no deviation from it has been
xperience of ten years having only
scale the points for general appear-
ndition."

Scale of Points for Bulls.

	Points.
breed on male and female sides, re- aving produced rich and yellow butter.	4
and tapering, cheek small, muzzle ncircled with white, nostril nigh and polished, crumpled, not too thick at nd tapering, tipped with black; ears n orange colour within, eye full and ……	8
and lightly placed on the shoulders; , barrel hooped and deep, well ribbed hips……	3
ight from the withers to the setting of right angles to the tail. Tail fine, o inches below the hock ……	3
and moveable, mellow, well covered nd fine hair of a good colour……	3
large and powerful, legs short and elling and full above the knee, and fine ……	2
rters from the huckle to the point of ng and well filled up; the legs not to d in walking ……	2
……	1
ppearance ……	2
Perfection……	28

all be awarded to a Bull having less than

Scale of Points for Cows and Heifers.

1.—Breed, on male and female sides, reputed for producing rich and yellow butter……	4
2.—Head small, fine, and tapering; eye full and lively. Muzzle fine and encircled with white; horns polished and a little crumpled, tipped with black; ears small, of an orange colour within..	8
3.—Back straight from the withers to the setting of the tail; chest deep and nearly of a line with the belly……	4
4.—Hide thin, moveable, but not too loose, well covered with fine and soft hair, of good colour..	2
5.—Barrel hooped and deep, well ribbed home, having but little space between the ribs and hips; tail fine, hanging two inches below the hock....	4
6.—Fore legs straight and fine, thighs full and long, close together when viewed from behind; hind legs short, and bones rather fine; hoof small; hind legs not to cross in walking……	2
7.—Udder full, well up behind; teats large and squarely placed, being wide apart; milk veins large and swelling ……	4
8.—Growth ……	1
9.—General appearance ……	2
Perfection for Cows……	30

Two points shall be deducted from the number required for perfection on heifers, as their udder and milk veins cannot be fully developed. A heifer will therefore be considered perfect at 28 points.

No prize shall be awarded to cows or heifers, having less than 21 points.

"The evil was, and still exists, that most Jersey farmers, like many others, never thought of crossing with a view to improvement, conscious of possessing a breed excellent for the production of rich milk and cream—milk so rich in some cows that it seems like what is sometimes called cream in cities—and cream so much richer that, from a verdant pasture in spring, it appears like clouted cream. But the Jersey farmer sought no further. He was content to possess an ugly ill-formed animal with flat sides, wide between the ribs and hips, cat-hammed, narrow and high hips, with a hollow back.

She had always possessed the head of a fawn, a soft eye, her elegant crumpled horn, small ears, yellow within, a clean neck and throat, fine bones, a fine tail; above all, a well-formed capacious udder, with large swelling milk veins.

"Content with these qualities, the only question in the selection of a bull, among the most judicious farmers was, "Is the breed a good one?" meaning, solely, had its progenitors been renowned for their milking and creaming qualities? But the mere attention to this was one of primary importance in a circumscribed spot like Jersey; it may have been quite sufficient to establish a hereditary superiority in the most needful quality."

The present price of the best Jersey Cows, as quoted by the Colonel, is from £20 to £30.

The paper No. III, is a communication from Lord Stanley, containing "*A further account of the Tussac Grass.*" The writer, Governor Moody, observes in reference to it:—

"I know that at present it may be cut twice in the year; but, under proper cultivation, it may be gone over much oftener—it greatly improves by cutting, and grows fast. Horses injure it by grazing, and pigs destroy it. My present experiment tends to show that it will grow on almost any soil: and that it is not necessary for it to be exposed to the spray of the sea, although a width of from 300 to 400 yards along the shore is the place of its natural growth.

"Although the tussac grass may be cut, and amply remunerate the planting in the first year, it seems to take three years (from the seed) to arrive at perfection: but the tufts bear "planting out" extremely well. As to how many years the same roots may last, I can offer no information: decayed portions of the root appear to accumulate, but in a properly attended piece of ground these would be annually removed.

"Under our present imperfect system, allowing the cattle to roam and graze at will—pulling out, wasting and trampling as much as they eat —the rough, irregular patches of tussac on Long Island, amounting together to about 150 acres, keep in good fat condition, for six months, 250 cattle and 70 horses. Under proper management, in my opinion, the same quantity would be found to maintain three times that number throughout the year.

"The grass rises high above the snow, is fresh and green all the winter, and from its height completely shelters the horses and cattle lying among it.

"Perhaps the best experiment which could be made in England would be to plant tussac on one of the small islands of the Orkneys, such as Hunda, if it met with the approbation of the owner: and I conceive it would be greatly to the advantage of the landed proprietors of the Orkney and Shetland Islands to send from among them an intelligent person to the Falkland Islands, to study the habits of the grass and to collect seed; he should arrive here early in October."

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Agricultural Improvements, Letters V and VI. By I. J. Mechi.

WE noticed in our last the fourth of these letters: the fifth is explanatory of the Buildings at Tiptree Hall and their advantages. As to the disadvantage of allowing rain water from the roofs to saturate the manure in the yards, hear Mr. M.:—

"The iron gutters and pipes to our roofs may be found fault with on account of the expense, but I really cannot see the utility or profit of the present custom, that is, putting good and costly manure on straw, and then washing it all out again with tens of thousands of gallons of pure water off the roofs, taking especial care that it shall spoil the horse-pond, and then run down to enrich some stranger's meadow at the first flood. I hope in fifty years time, the farmer who does this will be considered insane. The idea of a man's throwing away his manure with his left hand, and with his right paying money to bring it back again, all the way from Peru or Africa, seems too ludicrous for the nineteenth century."

On the economy of fodder he says, "All our horse feed is cut for the manger. Even our tares and green food are cut up with straw." Of which system there cannot be two opinions as to the advantage. We hope Mr. M. will do us the honour, this autumn, to try our plan of consuming green potatoe tops cut in the same way.

The sixth letter is "*On the Drainage of surface-face water from Heavy Land,*" in which the writer lays down the following fifteen theories:—

"*Theory* 1st. That in perfect drainage, twelve hours rain should percolate and leave the land, in less than twelve hours from the time the drains begin to act, the difference in time being equivalent to the proportion of water the earth chooses to retain for its use by capillary attraction.

"2d. That to effect this, the subterranean area of porosity should nearly equal the surface to be drained, so that if the space to be drained were one square yard, the sides and top of the drain should present an area for percolation equal to nine superficial feet, minus the allowance for pressure.

"3d. That the continuance of water in the soil longer than it would remain by capillary retention, is injurious, chemically and mechanically, causing inequality, density, and sedimentation.

"4th. That the earth and roots will abstract from the passing water those gases for which they have an affinity, and in which they may be deficient.

"5th. That the form of drain should be deep and narrow, as affording the greatest area of porosity at the smallest cost, increasing the

porous earth, available to roots—
mal or vegetable can exist in dense
ubsoils.
at the material for filling the drains
prise the greatest durability with the
of capillary attraction.
at where pipes are used, their ma-
d be durable but porous; their form
r square, but a very narrow and deep
object being to get a large area of

at small, round, hard pebble-stones,
over them (as used on my farm),
sent all the advantages desired, viz.,
bility of choking by superincumbent
tance of pressure from the sides,
capillary attraction; the round hard
ng but little mechanical affinity for
nd offering but small resistance to

hat the passage of water in a pipe
always quicker than its percolation
earth or material of the pipe.
hat no drain should much exceed
in length (fifty or sixty would be
hout opening into a leading drain of
nensions. If the drain were in any
would delay percolation.
That neither bushes, straw, or other
material, should ever be used in a

That the deeper the drainage, the
crops; but in no case should any
the drain be nearer to the surface
hes.
here should be a leader to every 300
ains, giving it ample capacity.
That there should be an open ditch
ce) for eveay seven or eight acres
The absence of an occasional open
at renders so much drainage useless.
tinuous narrow streets without fre-
ets get frequently obstructed; the
be said of drains—a full drain with
ress sadly retards the filtration of
rains should be never more than half
er—the other half air. In this way.
ior weight of water causes proper
y displacement of air and replacement
y quick passage.
That the rapidity of percolation de-
e subterranean area of porosity and
of drain combined. Shallow drains
ter area of porosity than deeper ones;
s water presses equally on all sides
vacant space in the drain) the deeper
he greater the weight and column of
nsequently, the greater the pressure
rapid the filtration; filtration at two
double that at one—at four feet four times as great, and so on in proportion to the superincumbent weight of water pressing equally on all sides towards the drain. It is on this principle that deep pipe drains act quicker and lay dry a greater extent than shallow ones—consequently, the deeper your drainage the smaller may be your area of subterranean porosity. Pipes at the depth of five feet would hardly need stones; the pressure being about two-and-a half pounds on every square inch at first, and as the water escape and diminishes, so will the drains run slower and slower, in a ratio proportioned to the diminished pressure."

The Veterinarian, August. London, Longman and Co.

In this number we have the following "*On Cases of Inversion and Excision of the Uterus in the Cow and Sheep,*" by Mr. C. Gardner, V.S., County of Cork, Ireland:—

"The first was a sheep, the property of Mr. S. H., of the county of Cork. This gentleman, finding he was not able to keep the uterus in its place, requested me to try what I could do with it. I told Mr. H. that, as the sheep was to be fatted, the womb was of no use to her, and we might as well cut it off. This being determined on, I commenced as high up as I could, tying the uterine arteries as I came to them, and stitched the cut edges together in order to prevent an effusion of the intestines. No more care was taken with her than usual, and in ten days' time she was caught for me to look at her, when I found that adhesion had taken place, and she was as well as ever.

"It so happened that Mr. J. H., near the same place, had a cow in which the uterus was inverted. The labia pudendi and uterus were here much injured; the latter from rough handling, and the former from pieces of wire having been passed through them. These having sloughed out, I need only to add, that the same operation was followed by the same results, and that, although the cow was rendered useless for breeding purposes, she was not at all lessened in value for fattening.

"I do not quote these cases as any thing strange, but merely because I think, when operated upon in this way, the patient suffers much less pain and the recovery is more expeditious than when removed by means of a ligature passed tightly round it, and allowing it to slough off. It also appears to me much more surgeon-like."

If, as Mr. Gardner truly remarks, an animal "is to be fatted, her womb can be of no use to her,"—nay, more in that case, she is very much better without it, for with her womb she loses all natural desire for copulation, and all those irritations which, repeated at intervals during the fatting process, delay its ultimate completion. We should, therefore, in all animals for fatting, desire the organs of generation removed, but particularly in every case of an inverted womb; all we should desire in those cases being that the operation be performed by one fully competent to the task.

The following is an account of "*Removal of Worms from the Stomach of a Cow,*" by Mr J. H. Shenton, Pendleton, Manchester:—

"On the 3rd of July inst. I was called on to attend a valuable and favourite cow (a heavy milker) of a cross breed between the Devonshire and short-horn, belonging to that indefatigable and enterprising firm, the Messrs. Barton, of the New Hall, Pendleton, and who are allowed to have the best selected stock for milkers in this county.

"The cow in question had been off her feed for three or four days—she hung down her head and slouched her ears, if you will allow the term—was dull and sleepy, with staring coat rather hide bound—extremities cold—pulse low and weak—rumination partially impeded—diminution of the secretion of milk to a very great extent—and, occasionally, symptoms that are observed in cases of flatulent colic.

"From the combined symptoms, I was of opinion that the cow had worms in her intestines that had brought on the above symptoms. I accordingly administered a saline diuretic, and an anthelmintic combined with a vegetable cathartic. I ordered the cow to be covered with a blanket, to be kept in the house, and to have bran mashes and warm water.

"In about nine hours after the administration of the medicine she passed a tape-worm of an enormous length; but before it could be got from her she trod on it with her hind feet and crushed it to pieces. However, I measured the length of it, which I have preserved, and found it be ten feet and three inches long, three-quarters of an inch wide, and one-eighth of an inch from joint to joint, and in that short length there are 984 joints.

"*July 4th.*—She is a little better to-day. The medicine has gently acted on her bowels—the fæces very coarse, rough, and spongy—she looks brisker, has taken food sparingly—milk about the same as yesterday, but the pulse more natural. A little oatmeal gruel was prepared, with bran mashes, and at night a saline diuretic was administered, combined with tonics, ve table and mineral.

"*5th.*—She is much better to-day—t her food better—ruminates freely—the co smoother—the skin looser—the pulse natur the secretion of milk increased—she looks lively, fæces more natural. Give her an h exercise in the field; mix a little bean mea crushed oats with her bran, and at night r the second dose.

"*6th.*—Much better in every respect. tinue the same course as on yesterday, e omitting the medicine.

"*8th.*—Quite recovered."

◆

OUR TABLE.

M. Saul.—*We have been considering h shall best bring your turnip-drill before our ers, which will require some alterations be can be made really useful. If you will do favour to forward us the block on which t graving of it is, we shall be able to exp much more satisfactorily: it may be left i of Mr. W. Brittain, 24, North John Liverpool.*

We have to acknowledge several favours. Journal of the Royal Agricultural Society I, vol. 5, came duly to hand. We are two ters in arrear with the Quarterly Jour Agriculture, not having received the numb March and June.

MANURES.

Subjoined are the latest prices of sever of manure:—

Bone dust, 16s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £8. per ton. 15s. per c
Guano, 10s. to 12s. per cwt., accord quantity.
Rape Dust, £6. to £6. 10s.per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 32s. 6d. pe landed and housed, 38s. to 42s. pe
Nitrate of Soda, 15s. 0d. (duty pd.) per
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per sufficient for three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 12s. per cwt.
Compost, £3. 12s. 6d. per hhd. suffic three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphur for Destroying Worm on Turni per cwt.
Sulphate Soda, 7s. 6d. per cwt.
Sulphuric Acid, 2½d. per ℔.

FOR SEPTEMBER.—Playden, Sid-
Long Preston 8, Nantwich, Chorley,
, Chester, Stalybridge, Barnet, Stam-
rthallerton, Chorley 6, St. Helen's 8,
astle 9, Ormskirk Charlbury, 10,
, Holbeach 11, Sandbach, Salisbury,
Malden, Stourport 13, Broadway,
Woolpit, Edmonton 16, Redditch
Gisbarn 18, Bridworth, Hatton,
rayton, Worcester, Abingdon 19,
gh 20, Evesham, Reading 21, Dav-
ndon 23, Bartholomew, Haverford-
hurch Stretton, Spalding 26, Padi-
ington 26, Middlewich, Todmorden,
Derby 27, Ludlow, Stamford, Rad-
e 28, Neston, Middleton, Wellington
, Wilmslow 30.

The Markets.

*ration which has taken place for the
e weather within the last week or ten
aused a pretty general decline in the*
HEAT. *At Mark Lane, on Monday
ugust, it fell full 3d. per bushel.*

, OATS, *and* BEANS *maintain their
ugh from the recent large arrivals of
nk they must give way to some extent.*

d MUTTON *of fair quality may be
5d. to 5¾d. in Liverpool, whilst in
best large oxen realised 6d. at the*
.

*—The trade in Wools continues steady
firm.*

*The same conflicting accounts continue
m the Hop districts as we had occa-
e last month. Upon the whole, how-
ounts are considered more favourable.
done at £125,000.*

LONDON, Aug. 26.		Per	Qr.
ssex and Kent, new, red		50	52
'hite	54	56	58
ish		0	0
hite		0	0
		30	34
		36	—
rinding		28	30
lalting		32	34
hevalier		35	—
ish		26	28
ere		26	—
MALT, Suffolk and Norfolk		58	60
Brown		56	58
Kingston and Ware		60	—
Chevalier		60	—
OATS, Yorksh. & Lincolnsh., feed		20	22
Potatoe		23	24
Youghall and Cork black		19	—
Cork, white		19	20
Dublin		19	20
Waterford, white		19	20
Black		19	20
Scotch feed		21	22
Potatoe		23	24
Limerick	19	20	21
Londonderry		19	20
BEANS, Tick, new		32	35
Old, small		36	38
PEAS, Grey		32	34
Maple		34	35
White		35	36
Boilers		36	38

SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..41
Mustard, White...... 6 7
Brown .... 8 11 per bush.

FLOUR, Town-made — 50
Suffolk.... — 38 per sk. of 280 lbs.
Stockton and Norfolk .... — 38

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		36	40
Hamburgh		36	—
Rostock		36	—
BARLEY		23	24
OATS, Brew		16	17
Feed		14	15
BEANS	—	24	28
PEAS		26	28
FLOUR, American, per barrel		—	25
Baltic		24	25

SEED MARKET.

	s.		s.
Canary, per qr.	54	to	58
Carraway, per cwt.	44	to	52
Clover, red, English	—	to	—
„ „ Foreign	—	to	—
„ white, English	—	to	—
„ „ Foreign	—	to	—
Coriander	12	to	18
Hempseed, per last	35	to	40
Linseed Cakes, Eng. p. 1000 £10		to £10	10
„ „ Foreign, p. ton £6		to £7	10
Mustard, white, per bushel	—	to	—
„ superfine „	—	to	—
„ brown „	—	to	—
Rapeseed, English, per last	£23	to	25
Tares, English, winter p. bushel	5	to	7
Foreign „ „ „	—	to	—

LONDON AVERAGES.

		£.	s.	d.
Wheat	3969 qrs.	2	10	4
Barley	576	1	12	5
Oats	15134	0	19	7
Rye	201	1	16	9
Beans	552	1	10	5
Peas	396	1	13	5

LIVERPOOL, Aug. 27.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℘ 70lbs.	7	6	7	10
Ditto, red	7	3	7	6
Irish white, new	6	6	7	3
Ditto, red	6	4	6	9
Egyptian	6	0	6	6
Oats, Eng. mealing, ℘ 45lbs.	2	11	3	0
Irish	2	8	2	9
Welsh	2	6	2	7
Barley, Eng. malting ℘ imp. qr.	34	0	38	0
Grinding	0	0	0	0
Irish and Scotch	3	10	4	3
Rye, per imp. qr.	30	0	32	0
Beans, English, per imp. qr.	37	0	39	0
Irish and Scotch	35	0	36	0
Foreign	35	0	38	0
Egyptian, per 480lbs.	31	0	33	0
Peas, English, per imp. qr.	39	0	41	0
Foreign	38	0	40	0
Malt, per imp. qr., fine	60	0	63	0
Flour, English, per 280lbs.	39	0	42	0
Irish	37	0	41	0
Foreign, duty-paid, per 190lbs., U.S.	28	0	29	0
Canadian	27	0	28	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	21	6	22	0
Irish	21	0	21	6
Indian Corn, per 480lbs.	28	0	30	0

PRICE OF AGRICULTURAL PRODUCE

LIVERPOOL, Aug. 26.

Hay, best	1s	1d.	*Potatoes.*		
Clover ditto	1	0	Short tops	0	0
Green ditto	0	3	Red apple	0	0
Vetches	0	3¼	Cups	0	0
Straw.			Cattle	2	6
Wheat	0	4½	Turnips	0	0
Oats	0	4¼	Carrots	0	0
Barley	0	0	Mangle	0	0

WAKEFIELD, Aug. 28.

The supply of Wheat to this day's market is small, and the sales are slow at a decline of 1s. per qr. There is a large quantity of free foreign Barley offering, which is dull of sale at rather lower prices; a sample of new Lincolnshire Barley was sold at 39s. Oats and Shelling as before. Beans in request, and 1s. to 2s. dearer. The arrivals are—Wheat, 3,999 qrs; Beans, 1,601; Peas, 367; Barley, 2,868; and Oats, 405.

CHESTER, Aug. 24.

	s.	d.	s.	d.
Wheat, white, 75lbs.	8	6	8	9
Ditto, red	8	3	8	6
Ditto new	7	6	7	8
Oats, 46lbs., new	2	6	2	8
Grinding Barley, per 60lbs.	4	0	4	6
Malting ditto, 38 qts.	0	0	0	0
Beans, new, per 80lbs	6	6	6	9

DUBLIN CORN EXCHANGE—Aug. 2

	s.	d.		s.	d.
Wheat, white (per brl.)	26	0	to	28	
„ red do.	25	0	to	26	
„ inferior, do.	23	0	to	24	
Oats, feeding, new	9	6	to	10	
Flour, first (per cwt.)	17	0	to	18	
„ second do.	16	0	to	16	
„ inferior do.	11	0	to	14	
„ third do.	6	0	to	9	
Oatmeal do.	9	0	to	10	

Cattle Markets.

LONDON, SMITHFIELD.

Aug. 26, 1844. ℘ st. of 8

	s.	d.		s.
Inferior coarse beasts	2	6	to	2
Second quality do.	2	10	to	3
Prime large Oxen	3	6	to	3
Prime Scots, &c.	3	10	to	4
Coarse and inferior Sheep	2	8	to	3
Second quality do.	3	2	to	3
Prime coarse woolled do	3	6	to	3
Prime Southdown do	3	10	to	4
Lambs	3	8	to	4
Large coarse calves	3	4	to	3
Prime small do	4	0	to	4
Large Hogs	3	0	to	3
Neat small Porkers	3	8	to	3

LIVERPOOL, Aug. 26.

	s.	d.	s.
Beef, per ℔.	0	5¼	0
Mutton	0	5	0
Lamb	0	0	0
Veal	0	5½	0

CATTLE IMPORTED INTO LIVERPOOL,

From the 19th to the 26th Aug.

Cows	Calves	Sheep	Lambs	Pigs	Ho
3315	46	8849	749	8978	22

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

SEPTEMBER—1844.

FENCES.

A correspondent in our last number asks an economical mode of fencing, and at same time efficient, "as a substitute for es on lands which in regular course be brought under the plough." It is a ject of great importance, and one to ch we have given some attention. It is clear that the old four feet ditches two yard hedges must go, but what uccessors are to be is matter for speculation. Different soils, with naturally different course of cropping, of course, require different fences, what these, in our opinion, should be ope shortly to lay before our readers. present we give, in another column, a er by a surveyor of Exeter, from which ibly some useful hints may be gathered; n that paper we will only observe that are not of opinion that white thorn ces are cheap, that is to say comparaly: they are good where shelter for ing stock is required, and they are od for protection, few beasts being hardy ough to face their thorns. But when a ict account is kept of the cost of plants d planting—of warding off the young dge from the nibbling of cattle and sheep, d of after cutting, with the repair of gaps de by hunters, shooters, and *trespassers* of various grades, and worse than all, the occasional loss by an unavoidable irruption through those gaps of breachy beasts or horses from a pasture field to one of young wheat or other grain, we are sure white thorn hedges will not be considered an economical mode of fencing. When some enquiries we have on foot shall be satisfactorily completed, we will present our readers with our opinions upon the subject.

◆

POTATOES.

It is a great pity to spoil so good a thing as a good potato; they are much improved by being spread under an airy shed, where they cannot be frost-bitten, and by having a basketful taken into the kitchen two or three days before being used, to get quite dry. If there is reason in roasting eggs, there is quite as much, and more, in boiling potatoes. It may be the cook's fault; but they are often taken up before they are quite ripe, and without being exposed to the air before they are housed or pitted. My potatoes were last year grown upon a clay loam well manured with stable dung, but the drills not being sufficiently landed up with the plough, many of the roots were rather exposed. Frost, with broken weather, came upon us before we raised *them* all, and they were placed in the pit wet, but did not get their winter covering for several weeks. I should observe that some care was bestowed, whilst raising them, in the selection of those intended for seed, as well as those which were injured by the frost, and no potatoes could possibly come better out of the pit last spring than they did—they were excellent till the end of June. I find the growers of potatoes for the large markets, in this and the adjoining counties, rather prefer putting them together wet; but then they do not cover the pits immediately with straw and soil in the usual way—they take care, of course, to cover sufficiently with straw to keep off the frosts, but the winter covering is not put on for several weeks. Great care is also taken to keep water from lodging round the pits or getting into them by soakage through the soil either at the sides or bottom. I have not a single failure amongst my short top potatoes this year; they were planted whole, and though late in germinating, bear at present the most promising appearance.—*B., Lancashire, Sep.* 19.

◆

THE WEATHER AND THE CROPS.

The grain harvest has now been brought to a conclusion; and if we except a portion of the extreme northern part of Scotland, and the hilly parts of North Wales, where the sickle is still busy, we may say, to a most satisfactory conclusion, as compared with what, at one time, appeared the fate of late sown wheat and spring crops. The yield, however, we do not expect will turn out, upon the average, what is in some districts anticipated.

Genial growing weather during the latter part of the month has brought on potatoes wonderfully, and turnips, particularly stubble sown, are getting a fair start. The pastures are full of grass, and heavy second crops of clover, and first hay crops left till now for harvesting, are everywhere being secured in good order. The soil is being prepared for wheat sowing, and in late districts the seeding has began in good order. A greater breadth of winter
will be this year sown than was eve
known, thus proving that farmers
a little beyond the present moment

Anglesea, Sep. 23.—The weather
most favourable for harvest work s
commencement of the harvest, and
no corn out in the whole count
small and wet patches which w
very late. The crops were not so
it was rumoured at first. The wh
was excellent; but the crop of ba
lighter than last year as to straw,
grain is large and plump. The oa
much better than expected, but it v
under an average.

◆

MANCHESTER AGRICULT SOCIETY.

The annual meeting, exhibition, di
distribution of premiums and reward
society, took place on Tuesday; the
Haywood's Hotel, Bridge-street, and
in the Manchester Police Yard,
street.

The show was smaller than that of
Indeed, we should say that on the w
was a small, but a very select show
The show of bulls was very good, th
so numerous as in former years. In
there was nothing very extraordina
show of dairy cows was not nume
those shown were of first-rate qual
three years old cattle were of the bes
tion. The two year olds very good
three or four were shown amongst wh
difficult to select the best. The on
heifers were also very good. There
one lot of drovers' cows shown, and
of the first-rate quality. There wa
mers' stock shown—we mean milch
cows. Of pigs, as usual, there wa
show; both boars, sows, and fat pigs
think it was hardly so good a show a
former years. The show of horses
thing similar to that of last year;
appeared to be more competition fo
roadster; several gentlemen in the
hood showed their horses,—which
rather better description than those of
years. Of sheep, the show (with one
of the Leicester breed) was, as usual,

George Wilbraham Esq., of Delam
president of the society for the year
sheriff of the county of Chester, pres

hairman, in proposing "The Man-
gricultural Society" said, he was glad
nany gentlemen met together in that
of manufactures, to promote the
ent of agriculture. He had heard it
arming in that district was in a very
; and, indeed, if he (the chairman)
ge of Cheshire farming by what he
the line of railway, he should himself
ry indifferent opinion of it; but he
in every parish near Chester, North-
Knutsford, farms in a state of culti-
would do credit to any agriculturist.
many subjects presented themselves
the course of his studies on agricul-
first of which he would name was
eding of stock, in homesteads, on
t clover, turnips, &c.; and he believed
one who had practised it had derived
advantage from it. The cattle were
and produced a greater quantity than
ut, and he believed that double the
uld be kept on the same extent of
was said that cheese could not be
od from the milk of cows fed in this
ay as if at large on pasture land; but
d from that opinion, and he believed
gentlemen present who could from
xperience give the meeting some in-
on this point. If this system of
uld be made general and successful,
tage would be derived by the farmer.
verting to the triumphs of machinery
try, and steam in the staple manu-
Manchester, and the industry and
which would go to the ends of Eu-
tain an improvement; he said this
e wanted to see in agriculture. Not
ths of science applied so directly to
—but he wished every farmer to
little knowledge of chemistry, and
of different manures. He should
thing, also, of botany, of the nature
getables he was cultivating, and
e a knowledge of the grasses,—some
ere fitted for light, others for heavy
e again for moving grounds: and
oped to see an end of "pink grass,"
e farmers appeared so carefully to
nd which was but a weed—and of
utch—[the cutch grass we presume.]
ought to know something, too, of
for the doctor was not always at
ought to know the arts of bleed-
ring, and the common modes of
medicine: in short, he knew no
which an accomplished farmer
t know something. He hoped the
not far distant when agriculture
conducted on scientific principles, and then, and then only, should they be able to compete with the manufactures.

The **Chairman** next proposed the health of the Vice-presidents.

Mr. **Crossley**, in acknowledging the toast, said that he had frequently attended the meetings of like societies, and he had that day derived great gratification from seeing the stock in the yard. He trusted they should never see the day when agriculture would not be considered the mainstay of England.

The **Chairman** then said, that it was a matter of great importance to consider the subject of the rot of the potato, when it was asserted gravely that a sort of disorder or blight affected the potato. The disorder was supposed to arise from the mode of setting, the mode of cultivation, the soil, the manure, or the mode of getting it up. It should be borne in mind, that the "long muck" which people were so fond in some places of putting to potatoes, had once caused a great disease amongst turnips. If potatoes were put aside in an outhouse, they were sure to shoot, and the first shoot was the most vigorous, and thus the strength was expended before it was put in the ground. In the present year, wherever he sowed whole potatoes, he had been successful, while sets had in many instances failed. Mr. Palin (who had lately obtained a reward of £50 for the best report on Cheshire farming) also recommended setting whole potatoes. Many persons waited to get up potatoes till they were black in the stalks, from the frost; but this was too late. When the leaves began to curl and wither, the bulbs were ripe; too often the autumn frosts spoiled the potatoes, for a few rotten potatoes would destroy the whole crop.

Mr. P. **Ainsworth** mentioned, that last year he had three statute acres planted with potatoes, to one half of which he applied farm yard manure, and to the other half guano, which latter failed; the potatoes were almost rotten; and he ordered the man to set the whole ground over again with potatoes, without further manure, and the consequence was he had a good crop of potatoes from both.

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AGRICULTURAL MEETINGS TO COME.—Cullompton Farmers' Club, Oct. 5, subject for discussion, "*Milch cows, their breed and management.*"

I want a two-horse power steam engine, and I find Mr. Pusey, in his account of Lincolnshire farming, speaks well of those on the disc principle. Can any of your readers give me a statement of the relative value, for barn purposes, of engines constructed upon that principle and upon the old system, and also the cost of each.—O.

AGRICULTURAL QUERIES.

I have been anxiously looking during the last two months for replies to the queries of two of your correspondents on draining, &c., signed "*A small proprietor,*" and "*T. S.,*" which appeared in the July number, and hope that they may receive full and explicit answers on an early occasion. I would beg leave to suggest that those queries of your correspondents which are not answered by other correspondents on the first month after insertion, should be answered by you (the Editor) or by some practical friend who is fully competent to furnish the requisite information, on the second month after the insertion of the queries; by so doing you would greatly increase the usefulness of your periodical.

Query 2.—I shall feel obliged if some practical correspondent will favour me with a few directons for the profitable management of the honey bee; stating the size, shape, and materials of which the most approved kinds of hives or boxes should be made; the weight required, of honey, bees, &c., in autumn to survive the winter and prosper during the following summer; the aspect most suitable for them in winter, and also in summer, with the time when they should be removed from one aspect to the other; also a few hints as to feeding, temperature, ventilation, &c., so as to obtain the greatest *profitable return* from a given outlay in boxes, hives, &c., will, at the same time, be thankfully received and appreciated. If any practical bee-keeper thinks well to favour me with a few lines addressed to E. Briggs, Edenham, Stamford, I shall feel great pleasure in attending to their communications.—*E. B., Edenham, Sep.* 1844.

[We see no great objection to the mode of answering queries proposed by our correspondent, after our readers shall have had time for that purpose. Our paramount object, however, is to elicit from practical farmers, practical replies to such questions as may be submitted through the medium of our columns—and the more replies to such questions we receive the better; for it is by a comparison of the various modes of operation that the best system is to be obtained; and he is the best farmer who has the greatest number of such systems, (if we may so speak) any of which he can apply as seasous and circumstances may dictate.—Ed. F. H.]

◆

STEEPED SEEDS.

Much attention was excited last year by some extraordinary announcements from Scotland to the effect that steeped seeds will produce a crop upon a worn out soil without manure, and the preparations for this steep have been advertised almost continually since: can any of your readers furnish the result of experiments with steeped seeds? No doubt many such experiments were made, and it would be very desirable, both in justice to Mr. Campbell, the introducer of the practice, and for the benefit of the farmer, that the effects of steeping seeds should be made known by as many as possible of those who have tried the effect of steeping.—E. J. L.

THE BREEDS, &c., OF HORNED CATTLE.

Being a subscriber to and reader of your valuable and pleasing periodical, and greatly admiring the contents of its interesting pages, I take the liberty of forwarding to you the following list of the external conformations of the various breeds of horned cattle that are commonly used in Britain. If you think it will be acceptable to any of your readers it is at your service to use as you think proper. In my humble opinion, a correct knowledge of the external points, by which the particular breed of a cow or an ox may be known at sight, is of the greatest importance to the veterinary surgeon, the connoisseur, the farmer,

Durham or Short-horn. *b*	Short, fine, & crumpled.	Red and white, sometimes self-red.	Rather thin, fine short moss-like hair.	Large size, good and well shaped bone, and much flesh.	Large quantity, medium quality.	Very good, and capable of being greatly improved.	Good, but requires good treatment.
Devonshire. *c*	Medium length, generally grow outwards and rather inclining upwards.	Generally red, with a light dun muzzle and ring round the eye.	Thin, very silky when handled.	Good size, fine bone and short fleshy carcass.	Quantity medium, & quality good.	Good when fattened, very fine grain and yields much gravy when cooked.	Strong and good constitution, and is easily fattened.
Galloways. *d*	None.	Black and brindled.	Rather thick, and hair long.	Large size, strong bone, well shaped.	Quantity small, quality rich.	Very good.	Hardy.
Guernsey. *e*	Short and crumpled, tipped with black.	Light cream colour, with black nose.	Very thin skin, short silky hair.	Small size, fine bone.	Quantity small, but very rich.	Medium.	In their native Island very good, when brought to England delicate.
Hereford. *f*	Medium length, and rather inclining upwards.	Generally red, with white faces.	Thin, with fine hair.	Large size, small bone, well shaped.	Quantity small, quality rich.	Good.	Good.
Highland. *g*	Medium size, and bent upwards.	Black and brindled, sometimes dun-black.	Thick skin, long hair.	Small size, well shaped.	Quantity small, quality rich.	Excellent, very fine grain, when cooked yields much gravy.	Very hardy.
Irish. *h*	Very long, and bent upwards.	Red, red and white, sometimes red and white mixed or roaned.	Thick skin, long hair.	Large size, strong bone. roughly shaped.	Quantity medium, quantity ditto.	Very good when fattened.	Very hardy.
Jersey, commonly called Alderney. *i*	Medium length, fine and crumpled, and tipped with black.	Cream colour & dun, light dun muzzle.	Skin very thin, fine short hair.	Smallish size, fine bone, good shape.	Quantity small, quality very rich.	Medium, when fattened very good.	In their native Island very good, but when brought to England require to be sheltered & good attention.
Lancashire. *j*	Long and thick.	Various, but more commonly red and white.	Skin thick, hair long and rough.	Large size, strong bone, roughly made.	Quality good, quantity medium.	Medium, when fattened very good.	Very hardy.
Sussex. *k*	Medium length, and bent upwards.	Red with white faces.	Skin thin, hair fine.	Good size, strong bone, well shaped.	Quantity medium, quality good.	Very good when fattened.	Pretty good.
Suffolk Duns. *l*	None.	Generally lightish dun colour.	Medium thickness, and shaggy hair.	Medium size, stiffly made.	Medium quality, medium quantity.	Medium.	Hardy.
Welsh. *m*	Very long, some medium and thick.	Black, sometimes black and white.	Skin thick, long shaggy hair.	Medium size, roughly made.	Medium quality, medium quantity.	Medium.	Hardy.

Where found and remarks on them.—*a* Ayrshire and most parts of England and Scotland: this breed is capable of great improvement.—*b* All parts, particularly the dairys of London, and the dairy farms in the vicinity of Manchester.—*c* Devonshire, and almost every county, particularly some parts of Yorkshire.—*d* Galloway and Norfolk, a few may be found in North Lancashire.—*e* The Channel Islands, and most of the private dairy farms of England.—*f* Commonly found in Herefordshire.—*g* Great numbers are brought from the Highlands of Scotland and fattened in England.—*h* Commonly found in the breeding and grazing counties of Ireland; great numbers are brought to the markets of London, Manchester, and Liverpool.—*i* Jersey and Alderney; they are frequently kept by private gentlemen in England, &c., on account of the great quantity of cream and butter they yield.—*j* Warwickshire, Leicestershire, and the northern parts of Lancashire.—*k* Sussex and Kent.—*l* Suffolk and Norfolk.—*m* Wales and a few may be found in any county in England, but they are going out of use very fast.

AGRICULTURAL QUERIES.

I have been anxiously looking during the last two months for replies to the queries of two of your correspondents on draining, &c., signed "*A small proprietor,*" and "*T. S.,*" which appeared in the July number, and hope that they may receive full and explicit answers on an early occasion. I would beg leave to suggest that those queries of your correspondents which are not answered by other correspondents on the first month after insertion, should be answered by you (the Editor) or by some practical friend who is fully competent to furnish the requisite information, on the second month after the insertion of the queries; by so doing you would greatly increase the usefulness of your periodical.

Query 2.—I shall feel obliged if some practical correspondent will favour me with a few directons for the profitable management of the honey bee; stating the size, shape, and materials of which the most approved kinds of hives or boxes should be made; the weight required, of honey, bees, &c., in autumn to survive the winter and prosper during the following summer; the aspect most suitable for them in winter, and also in summer, with the time when they should be removed from one aspect to the other; also a few hints as to feeding, temperature, ventilation, &c., so as to obtain the greatest *profitable return* from a given outlay in boxes, hives, &c., will, at the same time, be thankfully received and appreciated. If any practical bee-keeper thinks well to favour me with a few lines addressed to E. Briggs, Edenham, Stamford, I shall feel great pleasure in attending to their communications.—*E. B., Edenham, Sep.* 1844.

[We see no great objection to the mode of answering queries proposed by our correspondent, after our readers shall have had time for that purpose. Our paramount object, however, is to elicit from practical farmers, practical replies to such questions as may be submitted through the medium of our columns—and the more replies to such questions we receive the better; for it is by a comparison of the various modes of operation that the best system is to be obtained; and he is the best farmer who has the greatest number of such systems, (if we may so speak) any of which he can apply as seasons and circumstances may dictate.—Ed. F. H.]

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STEEPED SEEDS.

Much attention was excited last year by some extraordinary announcements from Scotland to the effect that steeped seeds will produce a crop upon a worn out soil without manure, and the preparations for this steep have been advertised almost continually since: can any of your readers furnish the result of experiments with steeped seeds? No doubt many such experiments were made, and it would be very desirable, both in justice to Mr. Campbell, the introducer of the practice, and for the benefit of the farmer, that the effects of steeping seeds should be made known by as many as possible of those who have tried the effect of steeping.—E. J. L.

THE BREEDS, &c., OF HORNED CATTLE.

Being a subscriber to and reader of your valuable and pleasing periodical, and greatly admiring the contents of its interesting pages, I take the liberty of forwarding to you the following list of the external conformations of the various breeds of horned cattle that are commonly used in Britain. If you think it will be acceptable to any of your readers it is at your service to use as you think proper. In my humble opinion, a correct knowledge of the external points, by which the particular breed of a cow or an ox may be known at sight, is of the greatest importance to the veterinary surgeon, the connoisseur, the farmer, the grazier, the cattle dealer, and dairyman, for by the attainment of this knowledge, a person

Durham or Short-horn. *b*	Short, fine, & crumpled.	Red and white, sometimes self-red.	Rather thin, fine short moss-like hair.	Large size, good and well shaped bone, and much flesh.	Large quantity, medium quality.	Very good, and capable of being greatly improved.	Good, but requires good treatment.
Devonshire. *c*	Medium length, generally grow outwards and rather inclining upwards.	Generally red, with a light dun muzzle and ring round the eye.	Thin, very silky when handled.	Good size, fine bone and short fleshy carcass.	Quantity medium, & quality good.	Good when fattened, very fine grain and yields much gravy when cooked.	Strong and good constitution, and is easily fattened.
Galloways. *d*	None.	Black and brindled.	Rather thick, and hair long.	Large size, strong bone, well shaped.	Quantity small, quality rich.	Very good.	Hardy.
Guernsey. *e*	Short and crumpled, tipped with black.	Light cream colour, with black nose.	Very thin skin, short silky hair.	Small size, fine bone.	Quantity small, but very rich.	Medium.	In their native Island very good, when brought to England delicate.
Hereford. *f*	Medium length, and rather inclining upwards.	Generally red, with white faces.	Thin, with fine hair.	Large size, small bone, well shaped.	Quantity small, quality rich.	Good.	Good.
Highland. *g*	Medium size, and bent upwards.	Black and brindled, sometimes dun-black.	Thick skin, long hair.	Small size, well shaped.	Quantity small, quality rich.	Excellent, very fine grain, when cooked yields much gravy.	Very hardy.
Irish. *h*	Very long, and bent upwards.	Red, red and white, sometimes red and white mixed or roaned.	Thick skin, long hair.	Large size, strong bone, roughly shaped.	Quantity medium, quantity ditto.	Very good when fattened.	Very hardy.
Jersey, commonly called Alderney. *i*	Medium length, fine and crumpled, and tipped with black.	Cream colour & dun, light dun muzzle.	Skin very thin, fine short hair.	Smallish size, fine bone, good shape.	Quantity small, quality very rich.	Medium, when fattened very good.	In their native Island very good, but when brought to England require to be sheltered & good attention.
Lancashire. *j*	Long and thick.	Various, but more commonly red and white.	Skin thick, hair long and rough.	Large size, strong bone, roughly made.	Quality good, quantity medium.	Medium, when fattened very good.	Very hardy.
Sussex. *k*	Medium length, and bent upwards.	Red with white faces.	Skin thin, hair fine.	Good size, strong bone, well shaped.	Quantity medium, quality good.	Very good when fattened.	Pretty good.
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The general and most expeditious way is by the large drill. This is constructed to deposit the bones, ashes, &c., with the seed, upon the level surface; drilling six or seven rows at once. It is drawn by three horses, and will drill twelve acres per day. The seed does not run down the same funnel as the bones, but has a separate apparatus immediately behind the latter; and the coulters of the drill generally cover the whole. A pair of light harrows are usually passed over once, after the sowing; and should much heavy rain succeed, it is desirable to give it another turn with the harrows immediately before it is dry, to prevent it from scarping. The quantity of seed sown, by each of these methods, is from two to three pounds per acre.

Subsequent Culture.—When the turnip plants are about of three weeks growth, they require to be thinned, and the weeds destroyed. This is usually performed by hand-hoeing; but in some cases, Swedes are hand-thinned by women, and subsequently horse-hoed; which can be done in all cases where they are sown in ridges, and is a considerable saving of labour. No two plants should be left together at the first hoeing, but they should be thoroughly singled; and a second hoeing must take place to destroy the weeds. For ordinary crops, they should be left seven to twelve inches distant, according to the richness or poverty of the soil; if the latter is the case, they should be at shorter distances, as they will grow to a smaller size. The whole of the ground should be gone over, as it loosens the earth, and promotes the growth of the plants. The operation is usually performed for from six to seven shillings per acre. Sometimes the crop requires hand-weeding, in the autumn; especially if the soil is infested with charlock.

Diseases.—The extensive and repeated culture of the turnip, has fostered the rapid increase of its natural enemies; and after *all the pains,* labour, and expense of the *cultivator, he often* sees his crop entirely destroyed, or seriously injured. The remedies he can apply for many of these can only be termed palliative; but still he has much in his power; and as the knowledge of natural history and field-entomology advances, he may expect more and more assistance.

The turnip flea, (*Haltica nemorum,*) is one of the worst enemies which attack the turnip plant; which it does when in its seed leaf state, and often destroys a crop and even the second and third sowings. It was once thought to be hatched from an egg deposited on the seed, but that opinion is now entirely exploded; and it is proved to deposit its *ovæ* on the leaves of the infant plant. It is of the order *coleoptera,* and family *chrysomelidæ.* Various steps have been taken in order to prevent its attacks, and several steeps for the seed used, but without success; top dressings of a saline and astringent character have been applied, but have failed; machines have even been invented, but none of these have succeeded. The only directions which can be given are,—sow plenty of seed,—use stimulating manure, to excite the plants to vigorous growth in their first stages,—and secure a sufficiency of moisture in the soil at the time of sowing; especially keeping the fields clear of charlock, which nurses the flea. Perhaps if any application is useful, it is lime.

The black caterpillar, larva of the *athalia centifoliæ* also preys upon the leaves, in a more advanced stage; appearing on the plants when they are about three weeks old. It is of the order *hymenoptera,* family *tenthridinidæ.* For an account of its natural history, and methods of destroying it, the writer refers to the last year's report, p. [illegible]

Another disease to which the turnip is liable, is vulgarly called, "fingers and toes." About a month after the plants have made their appearance, they begin to flag their leaves, and in a few sunny days, literally die by acres together. On examination, the fibres of the roots are found enlarged,

e root covered with tumours and
enses of every conceivable shape.
natter of dispute whether this is an
disease in the plant, from some
ity in the soil, or the primary work
sect. That an insect, in its maggot
eds upon these tumours the writer
known; but he has not been able
orily to decide, whether the insect
e or an effect of the disease. It is
he *muscidæ*. A naked fallow is a
for it; but all applications to the
plant have been ineffectual, except
which is said to have remedied it
lk.

ire worm is a sad enemy. It forms
ect of one of the Society's prize
—to that I refer.* The swarms
s, or plant lice, severely injure the
and from the smallness of their
often unobserved. In 1836, they
d terrific ravages. They suck the
the plant and appear in countless
. They are both oviparous and
s, and increase with amazing ra-
Happily they are always followed
ns of lady-cows, which feed on
well as insectiverous birds, which
ast numbers. No remedy can be
with any probability of success.
mer should carefully protect swal-
breasts, &c., which are great des-
f the aphides.†

are, especially on newly ploughed
at devourers of the turnip plant in all its stages. Ducks will devour them, but always injure the plants. Three bushels of quick-lime per acre, sown on the plants early in the morning, when the slugs are active, is a certain method of destroying them. Perhaps the very best preservation from all the above diseases may be stated to be,—liberal manuring, adapted to the soil,—thorough clearing of the land from weeds,—and in short, pursuing the steps above detailed, for securing a full crop. The vigour of the plants, in such cases, and their rapid vegetation, often enable them to overcome many serious attacks.—M. M. Milburn, *Thorpfield, Thirsk.*

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THE POTATOE FAILURE.

The mysterious failure of potatoe crops, under treatment and upon soils apparently well calculated to ensure success, is beginning to excite that attention which the importance of the subject demands.

Nature, in her most capricious moods, seems to delight in tantalizing us—land, which during many previous courses of cropping afforded an abundant return of all kinds of this valuable tuber, during the present course, has failed to give back of some sort even so much as the seed again, whilst other kinds have made half a return, and others rather more, whilst other kinds again have failed altogether. At the late meeting of the Scottish Agricultural Chemistry Association, in Glasgow, the subject underwent some discussion, and this discussion has been the means of bringing out practical as well as scientific men in various parts of the kingdom. We take the following as earnest of the zeal with which the subject will be investigated, and we give, from an Irish cotemporary, a few practical observations which would do credit to the Lothians, or of which a Norfolk man would not be ashamed:—

"The potatoe in a state of nature is not fit for food, but is, on that account, perhaps a more hardy plant. As it becomes fit for food by

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* Transactions, 1838, p. 57.

ubt the immense destruction, cruel as
ton, of insectiverous birds, whereof
nartins, swifts, redbreasts, fly catchers,
rrows, titmice, wagtails, &c., is one
e of the prevalence of myriads of
ich infest our turnips, hops, wheat,
.; nothing but the most reckless and
rance could allow one of these birds
yed. Instead of encouraging chil-
e the nests, and, worse than children,
birds, penalties ought to be enforced
practice which is productive of such

forced cultivation, its chemical constitution is changed. Those kinds which have been most cultivated, as being the best in quality, contain the smallest per-centage of starch—such as the rough reds—and are most liable to fail; while the worst qualities, which are not so much cultivated, contain a large amount of starch, and are scarcely known to fail. I believe it is remarked that all kinds are gradually improving in quality, and that new kinds are failing every year. When potatoes are first dug they invariably contain more starch than after being kept for four months in pits. 'By keeping till the spring," says Professor Johnston, 'potatoes lose from 4 to 7 per cent. of their weight, and the quantity of starch they are capable of yielding suffers a considerable diminution. Thus, according to Payen, the same variety of potato yielded of starch in

October, ...	17.2	per cent.
November, ...	16.8	"
December, ...	15.6	"
January, ...	15.5	"
February,............	15.2	"
March,..............	15.0	"
April, ...	14.5	"

This diminution is probably owing to the conversion of a portion of the starch into sugar and gum.'

"It is more than probable that heating in the pit or otherwise diminishes the proportion of starch, and so weakens the germinative powers. During the growth of the potato the parent tuber ferments and yields up its juices to the young plant; but if it ferment before the young plant can benefit by it, it is deprived of the nourishment intended for it, and fails in consequence. Whether the fermentation takes place in the pit, or after it is cut, or even after it is planted, or all combined, it is certain that one or other is a principal cause of failure. Some plant them whole, and so obviate a part of the evil; some plant early, and so the evil has not gone so far; some prepare the land *well*, and the weakened plant gets through; some prepare the land half, and a complete failure is the consequence; some again take much pains to prevent heating in the pit and otherwise, but they plant the potato upon *hot fermenting dung*, and if the weather be dry and the land burned up, the plant ferments too rapidly and fails; and such may have been the case with my autumn-planted potatoes—the tuber began to ferment, made a premature effort to fulfil the course of nature, but stopped short with a small tuber about three inches from the parent plant. Those planted later (in December) had colder weather and more moisture, and so succeeded. What I would recommend is this—avoid fermentation *in every way—plant in* deep, well-pulverized and rich soil, *but not upon fermenting du*
may be asked, when is the land to be m
if not at the time of planting? I answ
it must be previously put into good hear
by ploughing in the manure the autum
by which means the fermentation in t
will be over, or by planting potatoes a
nips, when the land will not only be suf
rich for potatoes, but will also be in a
pulverized and clean state. They ca
planted earlier, and when they com
ground they may get a hundred weig
of guano, or other artificial manure,
them on. We know that the best pota
the heaviest crops are obtained from
land without dung, why then should
till the land is quite exhausted by
cropping before we plant our potato
then gorge them with dung sufficien
crops! This is perfectly inconsistent
ture. The best seed is said to be that
high country, where they get little or no
except peat ashes, and where they are c
more according to nature. They ar
best for food, it is true, but that is
argument that they are the best for see
well known that the flax crop would b
by a heavy application of dung, and ye
must be *in good heart*, or the crop
light. I conceive that for all crops
should be well incorporated with the
and not applied in mass to the crop,
particularly so for potatoes. It has
been a rule with me to have the dung
pared before planting, so that the fern
was in a great measure over, and I h
had one or two kinds that failed. Thos
in autumn were on dung in the first
fermentation, and they partially failed.
now to plant my potatoes on land ma
autumn, and a part after turnips with
tional manure except a slight dressing i
and I hope others will try the same
planting, and record the results.

"I have a field of five acres plan
potatoes, in which I have not a singl
potato that I can perceive, whilst my ne
(some in the next field) are planting
and have sown turnip seeds in various
parts of their fields where their pot
has failed.

"My mode of proceeding was this; I
the field during last winter, and cross-
it after harrowing in the spring. It
harrowed and rolled. Waiting withou
for moisture, I did not commence plan
after the first of May. I opened the
the morning, manured them by the
of horses in the course of the day, a
them in the evening. By this means

nd earth about them. I took a hint r excellent publication to plant the vhole, a foot asunder in the drills, two feet and a half distant. Those re a medium size, which, if cut would ke two sets. This mode saved the f cutting, which, if performed ac- o the present practice, would be t inches asunder, which would amount me thing as to the quantity of seed. s of three different kinds—cups, Cork black seedlings—some kept in pits in houses, but all have thriven alike. s to be seen on the left-hand side of road leading from Aughnacloy to vithin half a mile of the former town, nty (Tyrone); and if there was even ng society in the county, I would any of its members to match it, but tely there is not; for although you ur invaluable little tract on farming is one at "Lifford, in Tyrone," that e assize town for the county Donegal, t, consequently, be in Tyrone—the f which are left with high rents to ir way for improvement in the dark, nding which Tyrone is a peaceable county.

potato planting was not finished until e of May. I got the seed from my r, and, on inquiry, I find they were the farm time out of mind."

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LARGE HEDGES & SMALL ENCLOSURES

NSHIRE AND THE ADJOINING COUNTIES.

s of the present system of dividing eneral over this and great part of hbouring counties, may be thus up. The hedges occupy in some ly 10 per cent., but on an average ten parishes, 7 1-7th per cent., or in fourteen; they shade and injure half as much, most persons, land- well as tenants, whose opinion I ed, say, *quite* as much more; they birds and vermin which injure the nd that this is no small evil any satisfy himself, by going into a t before harvest. They are nurse- weeds; they preveut that free cir- of air so necessary to the healthy of plants as well as animals; they acles to the drainage of the soil, the roots grown in them frequently choking up the drains. They are expensive to erect as well as to keep in repair; the expense of new hedges in labour and planting being about 3s. 6d. per perch, and that of keeping them in order about 5 per cent. of the rental; the soil on each side of them is generally thinner, from the materials for making the banks being taken from it. So many small enclosures require a much greater number of gates, which have to be kept up and renewed; they cause a much greater number of small lanes and cart tracks leading from one place to another. The damage from shade is also very much greater from those hedges which run east and west. To do the least damage and to be of the greatest service, as shelter, our most prevalent and severe winds being from the west and south-west, hedges should be made, and the long way of the fields be, from north to south; for the same reason that London lays it down as a rule in building a house, to make the diagonal line in that direction, namely, because the sun thus shines on every side of it every day The fences being in most cases crooked, and the fields of every shape but right-angled, the labour of every operation of the farm, particularly of ploughing, is most materially increased. The parishes of Huxham and Poltimore will contrast favourably with the others in this respect. This evil is anything but a trifling one, especially when to it is added the labour caused by the roots of trees which shoot out into the fields. In any parish this is felt; but in such a parish as Rewe, where there is much timber, one may see when the ground is laid open by the plough, that *the roots of the trees cross each other from opposite sides of the field.*

The following hints on substitutes for the present fortress like embankments are worthy of consideration:—

Where stall feeding is practised there need not be anything lost by hedges, as I have seen farms without any fences but that which surrounded and divided them from the adjoining farms, a furrow being all that separated one crop from another. But even where this system is not adopted there are several methods whereby farms may be sufficiently divided, and the whole or greater part of the ground saved which is at present lost. Besides railings of wood, wire, or iron rod, there is the sunk fence, none of these taking up any land. In wet, marshy, or boggy ground, ditches would serve for fences and drains at the same time; and in such a place as Broadclyst Moor this method of dividing and at the same time of draining the land would very much increase its value. But in cases where it might not be thought advisable, either owing to the first expense of iron rod, or wire railings, or to other circumstances, to adopt any of these methods of dividing land, the white thorn would make a cheap and good fence, taking up very little room, being impervious to cattle, and costing little either at first or in keeping up afterwards. A thousand plants will plant thirty perches of one row, or fifteen perches of two rows, the plants being six inches apart: they cost from 10s. to 20s. per thousand, according to their age, and the planting of them is very little. Sir John Kennaway, by taking down 100 perches of bank and planting 50 perches of thorn hedge, thus making three fields into two, saved nearly an acre of ground. Timber need not be encouraged in hedge-rows on account of its value, as, from the admission of foreign timber, this has been materially reduced. I should not think that the timber thus grown pays nearly so much annually as one per cent. of the rental, while it destroys about ten per cent. of the ground, allowing three per cent. more than what is actually occupied, for injuries sustained by the causes mentioned. What necessity is there for a farm, even so small as 100 acres, being divided into smaller enclosures than eight or ten-acre fields, and the remaining *twenty into four or five*, as might be most convenient? It would be a great improvement on the present state of things, if, instead of six fields of every ten being under four acres, there were the same proportion above ten acres. If to the loss shown to be sustained from these small enclosures and great hedges were added that from waste ground and the want of drainage, how very far short of its capabilities would appear that which is at present derived from our soil.—*John Grant, surveyor and land agent, Exeter.*

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ON STEEPING TURNIP SEED.

My object in the present communication is merely to impress a *veto* on steeping turnip seed previous to sowing; and I trust the very numerous and repeated experiments I have made, and with uniformly decided results, will operate as a salutary caution against steeping turnip seeds in chemical solutions. My first experiments were made on the 21st June, 1844, and after white stone turnip had been steeped for 55½ hours in solutions of carbonate of ammonia, muriate of ammonia, phosphate of ammonia, and silicate of potassa, with water simply, by way of comparison, it may suffice to say that while the entire number of the seeds steeped in water germinated, and grew very well, *not one* of any of the rest germinated, with the solitary exception of three or four of those steeped in silicate of potassa. Other chemical solutions were tried, and the period of steeping varied; but uniformly fatal to the germination and growth of turnip seed. This caveat seems of importance, as Mr. Campbell's (of Dundee) steep, which contains sulphate and muriate of ammonia, has been recommended for turnip seed, as well as wheat, barley, and oats.

From my multiplied experiments, I find much discrimination is essential in reference to chemical solutions, as steeps for various seeds. I have "Blue Moscow barley," which has tillered into *twenty-five stems* from seeds steeped in a particular ical solution; and "mummy wheat" h displays *sixteen stems*, by being simi- treated. On the other hand, kidney s, after being steeped 31 hours in a ion of phosphate of ammonia, entirely hed. Flax seed was steeped for 28 in water, phosphate of ammonia, and ate of ammonia. These all germi- and advanced in growth *pari passu*, he slightest difference being percep- Altringham carrot and Portugal were steeped for 28 hours in water, ate of ammonia, and phosphate of onia, and both carrot and onion ed essentially invigorated and bene- by the solution of sulphate of am- a.—*J. Murray, Sep.* 12.—*Mark Lane ess.*

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A TRIP
THE RICHMOND MEETING, 1844.

BY A DERBYSHIRE BROWN.

(Continued from page 231.)

we had whiled away our time at the ion, the crowd, like a confined mass of pent up by some opposing medium, was auntering about the town of Richmond, sly gazing at its natural and artificial ies, apparently in no way interested in , however worthy of admiration, so com- y did the all-absorbing subject for which had assembled appear to occupy their hts, and no further exertion seemed to ate them than a slight recognition they t be induced to make to some friend in the d—stupidity and sullenness it might have mistaken for by those who knew less of eart-stirring object they were realising in ipation, and which was indeed at once the test feast the eye could behold, and the glory at great and glorious county, the exhibition e Yorkshire Agricultural Society.

t last the signal was given that the appointed had arrived for admitting the lookers on— such an impetus—one mass of the crowd in- oed another, and new animation seemed to fused into the quiescent mass—some mag- influence seemed to be attracting them hward; for though no sensible diminution e crowd outside took place, still one passed word to another that the gates were open, a movement mechanically followed towards place, the scene of action. The parties who stationed themselves like so many statues e to the gates so long before the time of admission had now the advantage; and not a few hearts throbbed as they entered the lines of cattle to witness the result of the adjudication upon their own dear petted animals; and many their exultations, and frantic their gesticulations, and rapid their communications to their friends, as they were leisurely followed, of their success—contrasting ill with the woe-begone countenances—ill-disguised pain and disappointment which not a few experienced, for a winner, in almost every case, was at the expense of a great number of losers.

When we came to the street leading from the market place to the ground what a scene presented itself: the mixed mass had now every man his head one way; and, instead of the confused disorder of ten minutes before, men walking as in ranks, and kept upon the flags by the stream pouring into the town, they presented all the firmness, order, and steadiness of soldiers.

A stream almost unbroken were dashing into the town—every sort of vehicle, loaded with every kind of material humanity—every description of moveable animal ever designed or calculated for a beast of burden was hurried recklessly away along the road, and not a few poor jaded animals, ridden or driven far and fast, seemed, in this new state of things, to derive animation from the heart and spirit-stirring scene, and to manifest it too by his erected ears and a toss of his head. Here were market carts, carriages, phaetons, dog carts, poney carriages, omnibuses, coaches, gigs, in which carriage-horses, cart-horses, hunters, post horses, ponies, mules, and every sample of living quadruped of the riding or driving species were in requisition.

Here rolls along "my lord" in his well cushioned chariot, with a friend at his side pouring into his attentive ear witty jokes upon the motley appearance of the throng, or jocose hints for his after-dinner speech. Whilst keeping equal pace with him, in "hot haste" comes a burly yeoman, his buxom wife by his side, in a curiously constructed poney cart, the active little beast between the shafts of which, by his gait and paces, seems to proclaim, as he passes swiftly along, "I's Yorkshire too." Following my lord we have the "splash turn out" of one of the descendants of a breeder of short horns; the vehicle, horses, and harness, evincing the care bestowed upon their appearance; whilst mounted upon the hind seat is "a tiger" in tops and drab inexpressibles looking to the full as important a personage as his master; and on the further side of him trot a rattling pair of brother bucks, who, from their loud laughter, are evidently in no way further interested in the show than as amateur spectators, or probably intending purchasers, from a distant county, who having determined beforehand to untie their purse strings, and carry back with them, at almost any conceivable price, a young bull of the Kirkleavington blood, are perfectly easy as to the results of the judges' decisions, and evidently bent upon enjoying themselves.

The plans of admission appeared to us excellent, though somewhat tantalizing to strangers who had come so far. First, yellow tickets only were honoured; and many an envious glance was cast at parties who got a yellow ticket and were allowed to pass, while we who had got pink must quietly wait. We made enquiries as to how these magical tickets were procured, but, alas! we found that only members of the society were thus honoured, and we must 'bide our time,' and be content to be admitted when the 'sort of us' were eligible. Soon the second signal was given, and such a crush: to intercept the stream were vain and useless; it must be entered at a considerable distance; and no further exertion was needed to bring you to the point than keeping in it—the pressure from without was amply sufficient to effect it.

At last we enter. Every result of ingenuity and skill in the shape of mechanical science were carefully and orderly spread before the eye, with designatory stands corresponding with the catalogue of printed particulars, which contained not only the names of the various implements, but a statement of the makers' and inventors' names, and also as to whether they had been improved or not.

The mighty short horns—the glory of the north of England, were the great object of our search: albeit they are neither celebrated for milk, butter, nor even our dear Derbyshire cheese, but fat—loaded, disgraced—ugly with fat. First we came to a noble line of thirteen magnificent bulls: a crowd had collected round one to whose head a white rosette was attached, and a card, on which were the words, "The property of Thomas Bates, of Kirkleavington, Yarm." Mr. Bates is always a successful competitor at no one of this society's shows, which is a very much more severe ordeal than those of the Royal Agricultural Society, where first-rate short horns are comparatively few and far between, were his short-horns sent away without a prize. The bull in question—a beautiful roan, was six years old, and was called by Mr. B., "Second Cleveland Lad." Instead of inventing various names whereby to designate his cattle Mr. Bates chooses to keep up a few successful names, "adding a number to each. He often exhibits a Duchess 51st;" just in the manner of our monarchs who, when their predecessors have had the same name, take the number in which they stand in the succession.

(To be continued.)

LECTURES ON AGRICULTU
CHEMISTRY.

We see by the York papers that binson, of London, has, during month, delivered three Lectures cultural Chemistry in that city, which was devoted to that extra manure guano. The Dr. seems great reliance upon phosphorus, those manures which contain it, luded to it in each of his lectures, following extracts will show:—

FIRST LECTURE.

"Phosphorus, which was also a ingredient in soils intended for the wheat could be obtained from a variety o They could get phosphorus from nig redundance, and he would ask why sh draw upon guano, upon the soil of upon any other animal substance, s they had night soil within their reach. true that our national delicacy offered barrier in employing night soil to the other countries, but so sure as he sitting on that spot would the agri have their eyes opened on this point; th more closely follow the example of fo and avail themselves of a soil which so materially assist in the resuscitation tation."

Again,—

"Then with respect to phosphor could obtain phosphorus from night s stable manure, from cow dung, from dung, from fish, from bone dust, and fro and were he asked from which could it in the greatest quantity, he would re night soil."

In the second lecture he introdu following anecdote:—

"A gentleman, an extensive farmer colnshire, some years ago stated to m had given up all notions of using manures, as they were so expensive. there is nitrate of soda in your drysalt what was that for. He answered turn then said I would not have you make mind against artificial manures, beca have not got a crop of turnips from n soda, which is very good for giving gre a starting, the nitrogen being essent stimulant and an article of diet, both fo and vegetable life; but soda is very de itself, and turnips require what it does n —phosphorus. If you wanted such turnips as you expected, thirty or forty

ought to have given them phosphorus,
constituent part of them. He said,
I get this phosphorus? I replied,
various manures that contain phos-
n abundance; night soil contains a
er centage of it than any other manure
got. The gentleman had sixteen or
hundred acres under the plough, some
rom a large town; he remarked, there-
night soil was out of the question. I
stable manure; but he did not keep
roportion. I then alluded to fish, as
g a large quantity of phosphorus, but
were bad, and he was at some distance
coast. I then told him that he might
horus from guano, but it was at that
per ton, which he objected to give.
luded to bone-dust, and pledged my
t his neighbours, who had splendid
ps, used one or other of these ma-
he sequel of all this is, that he asked
science of chemistry was not one of
lifficulty, and I replied that it was the
f all the sciences."

r. then proceeded—

ained with him eight or ten days,
hemistry the subject of every hour's
ion, and it is wonderful how readily
l will unbend itself, though otherwise
d, advanced in life, and beset with the
he world—it is astonishing how readily
n on such an abstract subject as che-
received. Dr. Robinson then referred
and said the subject of boiling them
ght before the Maidstone Farmer's
en he was requested to give an ex-
on the subject. In boiling bones the
s is not removed, which the turnips
s can only be got rid of by calcination.
after repeated distillations, and a most
process, that phosphorus can be ob-
m bones; but how mysterious is the
of nature, which abstracts the phos-
m bones with the greatest readiness.
e than that; it is not necessary that
should be ground or powdered, in
urnish food for vegetable substances.
be placed in a bulky condition in the
o that the roots of the turnip, for in-
ay come in contact with them, and the
s which they contain will be abstract-
ar as phosphorus is concerned, boiled
not deteriorated. But bones also
me very nutritious substances besides
s. They hold a large proportion of
nd that gelatine contains an immense
f the elements of ammonia Gelatine
t nutritious portion of the food which
and it is also nutritious to vegetable
substances, although it must be decomposed into ammonia. The quantity of ammonia given out from the hoofs and horns of animals is very great, and these hoofs and horns are nothing less than glue or gelatine. All that fertilizing property is abstracted from bones by boiling. The oil is also abstracted. Oil does not give out ammonia from keeping; it will get rancid. It possesses no fertilizing properties, but in coming in contact with the alkalies of the soil, it forms a soapy matter, and every one knows that suds are extremely grateful to vegetation. Two substances are then got rid of by boiling; the gelatine, and also the oily portion, which form a compound of a refreshing and stimulatting nature to vegetable substances. It is a providential thing that phosphorus is not volatile like ammonia. True, when it combines with hydrogen, it has a disposition to escape, in the form of phosphorated hydrogen gas; but in animal manure it is fixed—it is found in the shape of phosphate of ammonia, phosphate of lime, phosphate of potas, phosphate of soda, and phosphate of magnesia."

In the course of the third lecture on guano, the Dr. made the following observations:—

"In consequence of the great start this subject has got, and the great share of interest it has excited in the public mind, many parties have now commenced making artificial fertilizing compounds, possessing, in a small and concentrated form, all the properties necessary to fertilize. I will not mention any names; it is not necessary to do so; but I believe all these compounds have been failures. I was conversing in town with the proprietors of a compost of this kind, which sells at £12 per ton, 12s. per cwt., and 5 cwt. is recommended to an acre, that is £3 an acre. It strikes me,—and I explained to the party at the time, that I could get Peruvian guano at £12 per ton, which used to cost £28 per ton—that unless manure is offered on more reasonable terms, it will not be found to sell. The party stated, on the word of their chemist, that one cwt. of their compost was equal to 3 cwt. of Peruvian guano. I said it is all very well to say so, but you cannot convince the farmer of that. Besides, he requires a cheap manure to meet his extravagant rents and the low price of grain. No manure eventually will pay—I am taking the average of England—where the cost is above 30s. per acre. African guano contains more urate of ammonia —Peruviam more phosphate of ammonia, although their fertilizing properties are the same. I have analysed samples of most kinds of guano and have found that the Peruvian was certainly not worth £12 a ton, if you could get African at £8 or £9, or even £10. I have had some samples from Liverpool, that would disgrace any firm, and I sent them back again. African guano has not yet had a fair trial in this country, but another season will enable us to judge of it. I should be disposed to give it a good word; but when I talk to gentlemen who lay out their hundreds of pounds in manures, they put questions directly to me, will it produce such and such results. This was asked of me by Lord Wenlock, but of course I could not answer. The adulteration of guano is scandalous. Two or three samples recently sent to me from Liverpool to examine seemed to have been very ingeniously got up. The article was chopped tanner's bark cut by powerful machinery; finely condensed portions of brick dust, mixed with chalk; and the whole seemed to have been steeped in vats of human urine, or pig's urine; it was not the urine of a graminivorous animal, for it contained a quantity of phosphorus. If guano is introduced into the ground along with seed, during a wet season, the soluble parts will pass off, and, of course, the seed will not receive that benefit from the contiguity of the guano it would have done. Again, if the weather is dry, the effects otherwise will not be apparent. Guano requires that gentle humidity that is peculiar to this climate, neither deluging rains, nor continued drought. Here is a sample of guano from Possession Island. I have examined it, and it contains a high proportion of lime. It is deficient in phosphorus, and strong in uria, which is accounted for because the fowl voids the urine at the same time as it voids the dung. So long, however, as a substance contains uria, it is a fertilizer to a high extent. But after all, as I have already said give me phosphorus. It is a remarkable fact, that the cleverest chemists in this country are now engaged in adulterating substances which are both eaten and drank. This was a fine field for them, as they had a fine set of men to work upon—the farmers. I was in Sussex lately, where there was a corn chandler and miller who had obtained a quantity of grain from several small farmers in his neighbourhood. Some of them were presenting their accounts to him as he had previously requested. He, however, said, he had not got any money, but if they would take guano, he would let them have it instead. I examined his guano, and refused to give him a certificate, as it was some wretched stuff from Liverpool or Manchester, or perhaps from Bermondsey."

The absolute necessity which exists for some check to the evil, growing with the increasing consumption of guano, of adulteration of this costly but useful manure, becomes every day more apparent, renders it more important that some should be taken to procure analyses c various compounds introduced to th mer under the name of guano. Unti is done, however, the only remedy w suggest is, to purchase immediately the hands of the importer; dealers i article have been found capable of n so as to enhance their profits; but il chasers can have the assurance th article is delivered to them direct fro ship or from the warehouse of the imp they need not fear; once however out controul of the importers, whose inte is to furnish a genuine article as a of increasing the consumption of i farmer is completely at the mercy dealer, who may or he may not give proportion of 15 cwt. of genuine gua his ton, the remainder being perhaps less as a manure. On this subject w quoted Dr. Robinson, as a caution brother farmers. We might here ad the more fresh guano can be procur better, for it is estimated to lose its qu very much by keeping.

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DARLINGTON FARMERS' CL

The September monthly meeting c club was held on the 16th Sep. at the of Mr. Thos. Dixon, land-agent and cultural engineer, their honorary sec The subject under discussion was " *sowing, with the preparation of the La seed, and the proper time for sowing.*" absence of Henry Chapman, Esq chairman, Mr. Walton, the vice-chai presided, and in opening the meet said that the subject they were then discuss was one of very great impo to the tillage land farmers of this bourhood, and one that he thought de more attention than was sometim stowed upon it; but more particularl regard to sowing wheat on clover ley his opinion was, that it was better hen the land was in a very wet state, particularly in a late season, for in case he thought it much better to e risk of a still later season, and have d in a tolerably dry and firm state, sow it very wet, he having himself enced the ill effects of wet sowing. en gave in detail an account of a clover ley, part of which was sown he land was wet, and the remainder ime later when the land had got into state, the crop being much superior dry sown land than on the wet. The was then discussed at considerable the members present seeming to reat interest therein. The unani- opinion seemed to be that it was le to avoid sowing when the land is ery wet state, and whether sown ast or drilled, it is better not to sow d too soon after being ploughed as is found to answer much better when d has been ploughed a while before- he seed then gets a firmer bed which believed to be very essential to its : with regard to the preparation of d it was believed that in all ordinary hat the method at present followed neighbourhood, as a preventative smut, answers very well, which is g the seed thoroughly with stale and afterwards mixing it with quick r where urine cannot be had in suf- quantity, then salt and water is n lieu of it, but giving the prefer- o urine when it can be had in or- cases; when this precaution has sed, and smut has made its appear- n the crop, it was believed to have ded from the seed wheat, not having horoughly mixed and wet in every the urine before applying the lime. also believed that (although smut itself grow) it is desirable to avoid wheat infected with it, as it is apt to e it a second time; but in cases it is requisite to sow smutty wheat, the best remedies known *is to wash* it in vitriol water instead of wetting it with stale urine. Drilling and ribbing wheat was considered by the members preferable to sowing broadcast in all cases where practicable, as, by that means, the land can be hoed whilst under crop, and kept much cleaner, and thereby not exhausted by growing weeds: it was also considered that a less quantity of seed per acre than what has been generally sown would answer equally well, if not better, and where two bushels per acre has been regularly sown, it was believed that six pecks per acre would be sufficient; and in support of this principle Mr. Joseph Johnson mentioned an accidental circumstance which happened in his own practice, which was as follows: some years ago, having prepared the seed wheat in the morning for the day's sowing, it happened from some cause or other (he believed from the urine being too strong) that such parts of the seed as was sown in the early part of the day sprouted as usual, and grew well; but such parts as were sown in the latter part of the day came up very much thinner, a good portion of it not having vegetated at all, whereby that part of the field which was sown in the latter part of the day looked for some time much too thin, and likely for a failing crop, yet when harvest came it was full as good, if not superior, to the other that was sown in the morning; he also further stated that he was now in the habit of sowing less seed than formerly, and which he found to answer a better purpose; he also now, in drilling his wheat, gave it more room betwixt the rows than formerly, and found it to answer better; he formerly drilled his wheat at six inches, but now and for the future he would always give it nine inches betwixt the rows, it thereby tillered better, was better to hoe and clean, and altogether answered a better purpose.

At the conclusion of the discussion, it was unanimously resolved,—1st. That it is desirable in sowing wheat to give it a firm bed, therefore it is better to have the land ploughed a week or two before sowing.—2nd. That in preparing the seed it is important that it be thoroughly mixed with the urine or brine, so that every grain is wet before adding the lime, and then the whole to be well worked together.—3rd. That the best time for sowing wheat is from the middle of October to the middle of November.

The subject fixed for discussion at the October monthly meeting is "*The best method of preserving Turnips through the winter, and whether it is desirable to draw them from the land both as regards the preservation of the Turnips, and keeping the land in condition.*"

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LAND-DRAINING ASSOCIATION FOR SCOTLAND.

It is admitted on all hands, and by all, that thorough or furrow-draining is the first step in agricultural improvement, if draining is required: and hence a *Land-draining Association* for Scotland is a most desirable *desideratum*. England in this matter has taken the lead, as she ought to do, and she has now her Yorkshire Land-draining Association. England is different in this respect from us: Yorkshire contains a population nearly as great as Scotland, and hence a Scottish association will not much exceed the Yorkshire, either in wealth or in numbers. But it is not of money or the sinews of war we would now humbly bespeak, and solicit the attention of our landowners and their tenants, and also of our law-makers and the Government.

To any one who looks about him, he cannot fail to observe that even in Scotland *thorough draining* is in its infancy; and why, because *capital* is not readily raised or obtained at present, from the state of the law, and which only can be remedied and amended by an *Act of Parliament*. Every one knows, who is at all acquainted with the law as regards the shipping interest, that the *last* advance for repairs on a vessel *is preferable* to *any* previous advance. The reason of this is self-evident—as, were it not for the advance *last* made to repair the vessel, she would in many cases become a total loss, and be worthless, without any claim on the underwriters.

Now, the object of an Act of Parliament for land-draining in Scotland is simply this, that it would be enacted and declared that the expense of *thorough* and *furrow* draining of land, either held under strict entail, or in fee simple, should be preferable to any debt *existing*, or that could *exist*—ay, and until the same is repaid with interest. Of course it would be optional in any one to avail themselves of the Act, and it would be necessary to stipulate that the sum advanced on *entailed* lands should be periodically paid off—*i.e. one-third* in ten or twelve years, besides the whole of the interest annually; and the written consent of heritable creditors on fee simple properties would fail to be obtained and produced along with the application to the Sheriff, or Judge Ordinary. The details otherwise might be an *amendment* upon, or in some measure be similar to that under the Act of Parliament 10, Geo. III. chap. 51. All proceedings under the Act to be obtained should be *free* of stamp duty, and at the least possible expense. This would give a boon and an *impetus* to agricultural improvement far greater than any protection or stimulant hitherto known; and joined to the efforts that are now so happily in a state of active progression, we would soon see the day when broad Scotland would raise two blades where only one grew formerly. No one could by possibility be injured, but *all* would be benefited, because the draining would raise the value of the land to at least double the amount of the gross expense of that improvement.

We earnestly hope that this letter will meet the eye of those in power, and particularly of our county members, *all* of whom are more or less personally interested—an who is not interested? and, besides, is not a subject of the greatest national importance?

Of course, to make the matter complete, a similar Act of Parliament is required for England and Ireland; and in this way money could be borrowed at a *very* low rate of interest.—*Amor Patriæ.*

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Valuable Thrashing Machine.—There is now in operation at Tywarnhayle experimental farm belonging to S. and R. Davey, Esqs., a thrashing machine, which from its simplicity of construction, and its great power, is a vast improvement on the former thrashing machines, or those now generally used. It performs the work of three horses and thrashes 125 sheaves of wheat and 225 sheaves of barley or oats an hour; and this is performed by a poor pony of 13 hands high. The improver is a miner, named Michael Harris, a poor man residing at Silverwell, in the parish of St Agnes, who is possessed of surprising natural genius, and therefore deserves support. He carries the whole apparatus about in a small cart, and contracts with the farmers of the neighbourhood at per 100 sheaves. Several gentlemen have seen the machine and pronounced it to be the greatest improvement yet made. Could the poor man have raised sufficient money to have carried him and his machine to Southampton the gentlemen say no doubt he would have obtained a good prize, since they did not see one there that approximated to anything near the improvement he has made.—*West of England Conservative.*

Rape, Kale, &c. for Winter Feeding.—A question was put in the *Chronicle*, What must the farmer resort to for winter feeding, now that the turnips have utterly failed in many places? I answer, let him *still* try Rape Kale on his turnip-field, without ploughing afresh. The ground may be harrowed and then sown; or the patches of ground where turnips have failed may be sown with rape seed after a shower; or steep the seed and let it dry so that it may not clog in the sowing.—If after *early potatoes*, the following plan has been recommended:—As you lift your potatoes, sow rape-seed 14lbs. or 15lbs. per acre, not later than the end of August. The price of the seed will not exceed five shillings per acre. If the season is favourable, you may lay on two and a half scores of sheep to four acres, about the middle or end of October. With the addition of the produce of half an acre of turnips thrown among the rape, you will have your sheep in first-rate condition for the spring market. In one similar instance, which came under my observation last season, the profit per score amounted to £9 10s., not deducting the price of seed. The land will be in excellent order for the reception of spring wheat, which will be found to yield better, and the quality of the grain will be much superior to that of winter wheat, which is unsuited to early soil. Turnips have been recommended on early soils after potatoes, but will not suit a cold situation.—I would also recommend farmers to sow rye and vetches upon their stubbles for spring feeding; they will find this a valuable assistant where the turnips have failed.—*Shrewsbury Chronicle.*

Experiment with Clover and Timothy Seed.—Desirous of learning, by direct trial, at what depths clover and timothy seed would germinate, I made a narrow trench in a favorable situation, three and a half feet long, increasing in depth from the surface at one end to the other end, where it was six inches deep. The bottom of it was therefore an inclined plane, and was made smooth and even, by pressing a straight-edged board forcibly upon it. Thus prepared, the seed was sown thickly in the trench, its whole length. In twenty-four days, at an average noon temperature of 45 deg., the plants appeared at the surface for four inches from the shallowest end towards the deepest part of the trench; and afterwards continued to appear from still deeper portions of the ground for seventeen inches, when it wholly ceased to vegetate.

Three months have now elapsed, and not a leaf has shown itself beyond the point just named. The clover and timothy sprouting alike, and ceased to germinate at the depth of two and a half inches. The plants are now nearly a foot high, at the shallow extremity of the trench: and diminish in stature as the trench deepens, the lowest being about five or six inches in height. The intelligent farmer will, of course, understand the object and appreciate the value of this experiment. Some of the same seed was scattered on the ground, at the same time, and left uncovered. It vegetated in due season; its radicals, from an eight to a fourth of an inch long, lay exposed to the snow and frost for some time, and finally found their way into the earth.—J. T. P. *Western Farmer and Gardener* (*America.*)

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VISIT TO THE PRESIDENT OF THE N. Y. S. AGRICULTURAL SOCIETY.

In the village of Kinderhook is the residence of Dr. J. P. Beekman, president of the New York State Agricultural Society. Dr. Beekman's *home place* is not large, (embracing only about 100 acres,) his principal farming operations being carried on at three other farms, situated from two to three miles distant. His primary objects are wool and grain. He has about one thousand sheep, mostly of Saxony blood. Their wool is very fine, and Dr. B. expects to realise sixty cents per pound for the clip of this year. We were shown the fleeces, which averaged two pounds ten ounces each, were very clean, and put up in good order. We saw none of the sheep, excepting a few bucks, and those we had not an opportunity of closely examining, but from their appearance, should think some of them were excellent animals.

Dr. Beekman gives his sheep generally no grain or roots—feeding in winter principally on hay, which he is careful to have cut at the proper time and well cured. To some of the feeble sheep, he sometimes gives a few oats. He finds his mode of sheep husbandry attended with very good profits. He sells no hay—finding that he can, in the average of seasons, turn it to better advantage by feeding sheep, besides the great benefit the sheep are to the land. The return for his hay is usually ten dollars per ton. Every farmer can see that this is profitable farming, because hay at ten dollars a ton, *on the farm*, is *a profitable article.*

Dr. B.'s course of farming on his sheep farm is very simple—the routine being merely grain, hay, and pasturage—the latter affording the best possible preparation for wheat—and the fertility of the farm has been constantly increasing under this management.

Plaster has been extensively used for many years, particularly on clover and Indian corn, with the best effects; but its effects are not now as visible as formerly; and *leached ashes* have taken its place in a good degree, the latter being now found most useful.

Eradication of Couch Grass, (Triticum repens.) Many of the farms about Kinderhook are overrun by this pest. Dr. Beekman has hit on a good plan to eradicate it. He has found that if he can keep the ground thickly covered for a year, with some other crop, the couch-grass dies—it is *smothered* out. The plan is this: if there is a piece of ground on which this grass has become troublesome, it is pastured with sheep till July—then evenly turned over with a plough, and sown immediately to buck-wheat. The crop starts quickly, gets the lead of the couch-grass, and soon covers the ground. The next spring the ground is planted to potatoes—they, also, thickly shade the ground, and continue to do so for nearly the whole season, which pretty effectually does the work for the couch-grass.

Lime on Sorrel.—To ascertain, if possible, whether lime will kill sorrel, Dr. Beekman had several loads of good lime spread on some land which was much infested with this plant. It was spread in the central part of a field thick, that the effect, if any was produced, might be seen. After a lapse of two years, *no* effect whatever has been discoverable, either for or against the sorrel or any other plant. The soil is rather light, inclining to gravel. On some other descriptions of soil, the lime would probably have produced beneficial effects as a manure.

Dr. B. keeps very particular accounts of his farming operations, and is able to calculate accurately the "loss and gain." He has sometimes rented his lands, reserving the right to direct as to their management—giving to the tenant, as the custom is, one-third of the crops—the tenant performing all the hand-labour, and the landlord furnishing the necessary implements, teams, seed, &c., and paying the taxes At other times he has managed his farms himself, hiring all the labour. On comparing profits, he found he made from 150 to 200 cents a year more, under his own management, than when the land was rented. We have no doubt that similar results would generally follow under *good* management, and we would recommend the example to some farmers withi our knowledge, who under the idea that they cannot make their lands profitable in their own hands, or with a view to "save trouble," resort to a system of renting, by which, in a few years, their farms correspond to Solomon's description of the garden of the slothful.

There is considerable Indian corn raised in the vicinity of Kinderhook, and in general the present crop looks well. We noticed some farmers practice very thick planting. In some fields the rows were only three feet apart, the hills eighteen inches apart in the rows, and four stalks to the hill. We do not hesitate to say this is too thick. Dr. Beekman's crop was planted at wider distances in the row, (by six r eight inches,) with not more than three stalks o the hill. The prospect is fair for a good yield—in fact he generally gets from fifty to eventy bushels to the acre.

The wheat crop in this neighbourhood is generally very poor. It was much winter-killed, nd has suffered some from rust, and much from he worm, or maggot in the head, and some rom the Hessian fly. Rye is good.

The farmers of Kinderhook are generally orehanded, and some of them evince as good anagement as is to be met with anywhere. Money is *made* here by farming—many instances were mentioned to us where men who had begun he world by "hiring out by the day," had, in he course of twenty or twenty-five years, accumulated property to the amount of forty to sixty housand dollars, wholly by farming.

Relative profits of free and slave labour.—Dr. Beekman related the following history in illustration of this point. During the period in hich slavery was tolerated in this state, a genleman owned a farm at Kinderhook consisting f 750 acres, in the cultivation of which he emloyed ten slaves. The products of the farm ere always insufficient to support the family nd carry on the farm, and had it not been for he business of blacksmithing, which was carried n by the owner of the farm, (but with a set of ands kept expressly for the purpose,) he could ot have made a living. When the gentleman ied, the farm was divided into three parts, mong the heirs. In the mean time slavery, in his state, was abolished. The farms were carried on by *hired* labor; the owners raised larger amilies than their father did—educated them etter—lived better—and each, from one-third f the original farm, accumulated a handsome rtune.—*The Cultivator, (American paper.)*

Wool in the United States.—It is truly ratifying to learn that the wool grower, ho has taken pains to improve his flock, as to obtain wool of the best quality is kely to be remunerated for his trouble and outlay in the increased price which fine wool now commands. Several of the farmers in Vernon, in this County, have recently sold their present and last year's clip for five shillings per pound. This, be it remembered, is from some of the best Saxony flocks in the State. Now if others will grow equally good wool they will find their account in the satisfaction of obtaining similar prices.—*C.*

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SEASON, CROPS, &c. IN AMERICA.

During the last eight or ten days we have had abundant and fertilizing rains. The season, so far, has been remarkably favorable for all kinds of grain and grass, and the country and crops in this vicinity (Albany) have rarely looked as well as they now do. The rye harvest has been progressing in this county for several days; it commenced somewhat earlier than usual, and the crop will be full an average one.

From the success attending the wheat crop in this vicinity, for the last two or three years, our farmers were encouraged to extend the cultivation, and considerable wheat was sown last year, and from the appearance of the fields in the early part of the season, we had every reason to expect full an average crop, but the depredations of the grain worm has blasted our hopes, as from many fields it is conjectured that little more than the amount of seed sown will be obtained.—The worm has been more prevalent this, than for several years back. We find similar complaints in other sections. In Illinois the wheat is said to be very poor; in many places it will not pay the expense of harvesting, while in Wisconsin, it promises an abundance.

Our farmers are about commencing their haying, with the promise of a good crop, particularly on newly seeded fields. We have noticed an uncommon quantity of the Oxeye daisy, in our fields this season, and we have also noticed the same in our neighbours' fields, some of which are comparatively whitened with their blossoms.

Oats.—This crop promises to be uncommon heavy; straw not so large, but the heads are large and well filled; the season has been quite favourable to this grain.

Corn (Indian) generally looks well; the early planted being tasseled. Some of our gardeners, occupying warm soils have had green corn in market already. The field crop bids fair to make full an average yield.

Potatoes.—The season has been favourable to this valuable crop, and so far as we can learn, will be an abundant yield. Young potatoes appeared in our market some ten days since, of good size and fair quality.

Pastures have been good, and stock generally looks well. Complaints have been made in some sections, particularly in Massachusetts, near Boston, of a drought, but in this vicinity we have had seasonable showers, and some very warm weather. On the whole, the season has been favourable to the farmer, and he has no reason to complain if he finds a good market for his produce, at fair prices.

Since writing the foregoing we have noticed some pieces of wheat badly struck with the rust, owing probably to the late warm rains.—*B., July* 21*st*, 1844.—*Central New York Farmer.*

Horticulture, &c.

HERBACEOUS PLANTS.—The following are handsome and rather new hardy sorts:—Aquilegia fragrans; Statice pseudo-armeria, Campanula grandis, Cynoglossum longiflorum, Sedum Sieboldii, Epimedium macranthum, Hoteia japonica, Phlox Van Houttei, Salvia hians, Potentilla insignis, Pentstemon crassifolium, and Anemone vitifolia.

NOTICES OF NEW PLANTS WHICH ARE EITHER USEFUL OR ORNAMENTAL.—ALONA CŒLESTIS. Sky-blue Alona. (*Greenhouse Shrub.*) Nolanaceæ. Pentandria Monogynia.—It has long been known to botanists that Chile and Peru abound in shrubby plants allied to Nolana, few of which are yet published, but including among them some species of remarkable beauty. This one has been raised from some of Mr. Bridges's seeds, by Mr. Best, gr. to A. Park, Esq., of Merton Grove, Surrey. It proves to be a very fine thing, with pale sky-blue flowers, each of which remains in beauty for several days. Its habit is that of a soft-leaved Heath, and it appears likely to form a bush of some such a size as a common Pelargonium. What its proper treatment may be we are unable to tell, having had no opportunity of studying the plant; but we presume it will thrive with the same cultivation as Scarlet Pelargoniums, and we hope it will prove a capital thing for bedding out during the summer. *We would, however,* suggest to gardeners, that as all the Nolanas appear to be shore plants, salt in small quantities may be found useful in the soil. A plant of it was exhibited to the Horticultural Society in July last, when it received the silver Knightian Medal.—*Botanical Register.*

HYACINTH.—Pick firm, plump bulbs, as round as may be. These are always the soundest, and are not likely to damp off. When they are placed in glasses, take care that the water does not come within one inch of the bulb; put them in a dark closet that is rather warm, or, which is better, wrap them all over the glass and bulb, with old flannel, and keep them in a warm place till the roots are an inch long at least. The reason for this very important rule is, that roots should always be formed before leaves; otherwise, when the latter begin to grow they have nothing to feed them. Get plenty of roots first, and leaves and flowers will take care of themselves. The reason why the water should not touch the bulbs is, that if the plant is slow in growing, the organisable matter of the bulb is distended with fluid before it can decompose it, and so becomes putrid, when it communicates disease in all directions by virtue of its contagious properties. On the contrary, if the roots are active, and the leaves are beginning to grow, what water is taken up is immediately converted into some of the matter that hyacinths feed on. After roots have made a fair appearance water may be allowed to reach their tips, but not sooner, and it is only when the leaves are green and unfolding that it should be permitted to touch the bulb. At that time, that is to say when the leaves are green, a lump of charcoal as large as an egg may be advantageously dropped into the water. It will prevent the water becoming putrid, and will, besides, act as a manure. None of these precautions can, however, be of any avail unless the hyacinths are kept close to the light continually, from the time when the leaves are first turned green. Thus, and thus only, will a healthy growth be preserved, and a fine vigorous head of flowers insured. Above all things, too, be careful to make the plants grow as slowly as possible at first, so as to accumulate vigour against the blooming season.—*Gard. Chron.*

ONIONS.—A piece of garden ground, 18 yards long, and 4 feet wide, cultivated by Mr Everitt, gr. to D. Hoste, Esq., Barwick House, Norfolk, produced this year 28st. 12lbs of White Spanish Onions.

IAS.—The following is an excel- y :—Eclipse, Rival King, Vic- a, Triumph, Goodeii, Emperor, , Black Knight, Fanny Ellsler, , Compacta, and Criterion.

Reviews, &c.

narian, September. Longman London.

from this useful periodical the which will be found no less in- the professional than the non- reader :—

t of a Singular Mortality among By Mr. J. HOWELL, V.S., Wick- Wotton-under-Edge.

entured to send to you the particu- e, a new disease that has lately ongst some cattle in this neighbour- s the mortality has hitherto been those that have been attacked, I ery much obliged to you if you me your opinion respecting the ny way throw a light upon the use of it. I have also written to onds's opinion, but as yet have not answer.

uested to visit a farm-house six for the purpose of examining a n two neighbouring practitioners, had been in attendance. The cow l to have died from poison, two ; died the week previous, and five hen ill.

ptoms observable in those that were a peculiar dulness—dimness of ed back—coat a little staring, and n to move: still they ruminated was moist—the dung soft. These ymptoms observable for perhaps e hours, when there was a trem- uscles of the neck and shoulders, lty of breathing and slight enlarge- throat—frequent lying down— nose on the left side, when they out and die without a struggle, n two hours after the trembling at recovered did not appear to be erely, neither was the trembling trong in them.

nortem appearances.—We observed pen the cavity of the abdomen, a of the peritoneum and omentum. ing the intestines a quantity of as perceived in the cavity of the dark colour. The stomachs were thy, as also the liver. The only abnormal appearance was an enlargement of the spleen, which was four times its natural size, softened, and containing a quantity of very thick and dark-coloured blood, some of which was escaping from small ruptures on its concave surface. The heart and lungs were healthy, except that the lungs presented almost a white appearance; the brain was also normal, excepting a slight congestion of the plexus choroides. As the cows were supposed to be suffering from vegetable poison, I made a very careful examination of the contents of the stomachs, but failed in detecting anything of an injurious character.

"The treatment that had been adopted consisted of bleeding, purging with Epsom salts, and, afterwards, half-pint doses of brandy in water. Three out of eight that were attacked died; also three pigs, supposed to have died from eating the blood.

"This last week I have been called in to the adjoining farm to see the cows there, some of whom have died in a similar way, with this difference, that there appears to be more difficulty of breathing just before death, and the disease is more fatal, eight out of fourteen having already died. In some of them the disease cut them off in two hours after they were seen to be ill. I have examined most of them, and find them nearly all alike. I weighed the spleen of one. Its weight was 12¾ lbs. The treatment I have adopted has been purging—a bleeding when the case has lingered a little, giving nitre, tartar emetic, &c. and, in two cases, I fancied with benefit, an ounce of compound spirits of hartshorn, every two hours. As a preventive, I have bled every head of cattle on the farm, giving to each Epsom salts 8 oz., sublime sulphur 4 oz., nitre, (salt petre) ½ oz., ginger ¼ oz. &c. Two of them have been attacked since, but one of them recovered.

"They are all milking cows, except one nineteen months old heifer. They have not been in good keep, for, owing to the shortness of keep this summer, cattle generally do not look so well as usual. They have not been changed from one part of the farm to another. Both farms are a poor clay soil, and no running stream on either; still the water has been pretty plentiful this summer, more so than on some farms.

"The opinion I have given is, that the disease of the spleen is the cause of death: that it is brought on by the long-continued hot and dry summer, the blood having become vitiated in quality—congestion of the spleen following, and rupture, and death. I forgot to mention that the blood taken from a sick animal is very slow in coagulating, perhaps six or eight hours. If one is examined twelve hours after death, there is no coagulated blood found in the cavities of the heart, but of a semifluid and dark colour."

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The Journal of the Royal Agricultural Society of England. Part I, Vol. V. London, Murray. *(Second notice.)*

We pass over the condensed report by Mr. Wm. Palin, "*Of the Agriculture of Cheshire,*" as we learn it is the intention of that gentleman to publish, with the sanction of the council of the Royal Society, the report in a cheap form, complete, from his original notes, with an appendix; and because we understand another gentleman, in every respect well qualified for the task, has written upon the subject (but whose report was rejected by the committee of the council,) intends also to publish—for these reasons we propose to notice the two publications when they appear, and from each of which we will present to our readers copious extracts.

And here we would remark upon the custom which some of our periodical cotemporaries have latterly adopted of pouncing upon any paper in the *Journal of the Royal Society,* which promises to prove interesting, and transferring it wholesale to their columns, without the leave previously obtained of either the council, in whom we suppose the copyright to be vested, or the writer, who is manifestly injured when he contemplates subsequent publication. We would take leave to suggest to these literary pirates that, as a matter of courtesy, if for no other reason, before a wholesale transfer from the pages of the journal is made, a penny post cover be despatched to the writer containing a civilly worded request that if he himself does not contemplate future publication, he (the writer) may be allowed to do so. This course, so easily taken, would remove every cause of complaint, except from the council of the Royal Society, and as a main object of that body is to give publicity to every thing which may tend to improve the science of agri*culture,* we cannot contemplate a serious
objection from that quarter. Thi
course we have laid down for o
and we heartily recommend it to
thren for their adoption.

The VII paper is by Charles R
"*On the improvement of cold and he*
by the application of burnt clay," a
the form of a letter to Edward I
Esq., in which a description of the
mode of burning clay lands, with
sults, are given.

It may be summed up thus:—fi
rough drain, then burn clay an
grass with the hedge cuttings or c
spread; sow with vetches, rape, or
and eat off with sheep; if turnips a
apply manure, and after the crop
sumed by sheep, sow with wheat, a
down to be again broken up for wh

The VIII paper is by the Con
Engineer to the Society, and is
into two parts,—"1. *On the infl*
water on the temperature of soils.
the quantity of rain-water and its d
by drains." The first of these pape
extremely important and very int
discussion of the experiments made
writer as well as those of the late Si
phrey Davy and Dr. Leslie. In th
of it he considers—1st, The physica
of water on soils. 2nd, The physi
perties of earthy matter; and 3rd, t
and physical action of dew. The
paper, which is to our mind the mo
tically useful at the present mo
introduced by the following observa

> "Having had, however, the good f
> obtain a record of observations illustrat
> forcibly, the necessity of draining retent
> —by bringing within the scope of arit
> computation the quantity of rain-wate
> is annually evaporated from the mass of
> "at depths accessible to the cultivat
> the quantity which either permeates p
> must stagnate in retentive soils, I have a
> the following section to the foregoing
> sion, as contributing to establish cer
> tistics of drainage, or, to use your own
> "as striking a debtor and creditor
> between the earth and the sky."

ter then sets out on his task by
ıg to us a very useful member of

e indebted to Mr. John Dickinson of
ill, near King's Langley, Herts (the
ufacturer), for a register extending
eriod of the last eight years, of the
f rain which has fallen in his locality,
quantity which may be presumed to
d through the soil.

be interesting and useful to agricul-
learn Mr. Dickinson's object, as a
rer, in ascertaining and registering
a of this nature. Having several
ıe river Colne or its tributaries, it was
of importance to him to be able to
he power of water on which he might
use at different periods of the year;
g noticed that a considerable period
er rain, owing to the extent and strati-
the country, before the springs were
it, he fixed a rain and Dalton gauge
is judgment in forming an estimate of
ıt and duration of their flow according
ying seasons, and the proportionable
er on which he might count. These
ombined with observation, have since
m to regulate hs manufacturing oper-
l to foresee what dependance he could
the mill-streams, and to what extent
require the aid of steam-power for
ıis contracts and engagements. This
emarkable and honourable instance of
ation of meteorological 'science to

this all—for the knowledge acquired
of these instruments, and the exposi-
e results of rain and filtration proved
together with a just acquaintance with
nd nature of the soils of the district
the streams about 120 square miles),
Ir. Dickinson, two years since, to de-
the impracticability of a scheme for
; the Metropolis with water proposed
n from the valley of the Colne, which
e inflicted irreparable injury on the
rs, at the same time that it would have
all probability, an abortive speculation
enturers. Such are the various and
pected fruits of exact knowledge. It
Dickenson's communication of his
ts to the Institution of Civil En-
st year which introduced me to his
nce, and has enabled me to apply his
facts to the subject of agricultural

ickinson's observations are com-
d in a tabular form, which the writer gives—of this table he observes;—

"The first important fact disclosed is, that, of the whole annual rain, about 42½ per cent., or 11$\frac{3}{10}$ inches out of 26$\frac{6}{10}$ inches, have filtered through the soil; and that the annual evaporative force is only equal to the removal of about 57½ per cent of the total rain which falls on any given extent of earth 3 feet in depth.

"By a closer scrutiny we learn that only about 25½ per cent. of the rain which falls from October to March inclusive, passes back to the atmosphere by evaporation in the same period; whereas from April to September inclusive, about 93 per cent. is evaporated. It appears, then, that there is even a balance on the side of rain over evaporation during the six hottest months; and we discover only two years, 1840 and 1841, in which no filtration occurred within that period. In August the soil is in its driest state; but, even in that month, some filtration took place in 3 out of the 8 seasons recorded. It will be understood, that though a near balance is shown to subsist between rain and evaporation during the six hottest months, on an average of years, the hygrometric condition of a soil, *i. e.* its state of wetness or dryness at any particular time, is not indicated by the Dalton gauge. A soil may be in a state of drought, or of humid saturation at different times during these months, and according to the season. It is, however, manifest, from these registers, that if all the water derived from rain during the six colder months were allowed to accumulate in a soil, such land must be perpetually *wet;* and coupling this fact with the performance of drains, which I am now enabled to exhibit, it appears that six months are expended in maintaining, by the sole unaided force of evaporation, and undrained retentive soil in a tolerably uniform moist condition, whilst deep covered drains relieve the same soils of excess of humidity in a very few hours after every fall of rain, even in the wettest season. The mean excess of rain-water to be disposed of during the six coldest months by some other process than evaporation, amounts to no less a weight than about 1050 tons per acre."

On the average Mr. Dickinson's experiments shew that—

"The discharge of water by drains occurs, on the average, during seven months of the year. In 1840 and 1841, however, rain was in excess over evaporation only during four months: though in the first year 21$\frac{4}{10}$ inches of rain fell, whilst in the second the earth received 32$\frac{1}{10}$ inches, or 50 per cent. more rain in the latter than in the former year; yet the soil was equally dry in both years on the mean of the six hottest months, for the evaporative force was able to relieve the soil of all the rain that fell, though the quantities were so widely different, being 15$\frac{2}{10}$ inches in 1841, and only 9$\frac{6}{10}$ inches in 1840. But turning to the six colder months of the same years, we find the case reversed, for the proportionate evaporation in 1840 was double that in 1841. It appears, too, that in 1836, when the quantity of rain was only about one inch less than the maximum in 1841, the force of evaporation was 13 per cent. less, and water filtered through the gauge in various proportions, during every month of that year, and the same in 1839. Thus, in preparing soil to receive the utmost benefit and the least evil from rain, however slight or excessive, it should be put into a state to refuse holding water in excess, but be capable of absorbing humidity freely and retaining it deeply; whilst the drains should admit water with facility, and convey it away with dispatch.

"The quantities of rain and filtration denoted by Mr. Dickinson's gauges are daily registered, and this record has enabled me to ascertain a remarkable coincidence between the action of the Dalton gauge and that of Mr. Hammond's inch-pipe drains, as reported to the Royal Agricultural Society, in the last Journal p. 375. It appears, according to the rain-gauge, that $\frac{48}{100}$ths of an inch of rain fell on the 7th and 8th of November last; and by the Dalton gauge, that on the 9th $\frac{46}{100}$ths, or nearly the whole of this quantity, had passed through it. It was on the 9th that I inspected the drainage of Mr. Hammond's farm, recording the fact that, after a rain of about 12 hours' duration on the 7th, I found the drains on the 9th, in a nine acre piece, 3 feet deep, just dribbling, and those in a hop-ground adjoining, 4 feet deep, exhausted; Mr. Hammond having observed, previously to my arrival, that the greatest stream at the outfall of each drain amounted to about the half-bore of the inch pipes. The times occupied in the discharge of the water by the gauge and the drains may, therefore, be considered to be identical, and as comprising about 48 hours from the commencement of the rain. In drawing this parallel between the action of the gauge and these drains, I am presuming that the fall of rain at Penshurst was equal to that at King's Langley; and I think this may be assumed to be near enough to the truth, as I have learnt that a nearly similar downfall ($\frac{5}{10}$ths of an inch) was recorded at Birmingham northwards, and a rain of similar duration occurred at Brighton southwards.

"This experimental corroboration of the sufficiency of such small drains will have its weight with practical men; but I am further able to demonstrate, by simple arithmetical *computation*, how very small is the quantity of water required to enter the crevice formed the imperfect junction of two pipes. The ra gauge informs us, that $\frac{48}{100}$ths of an inch depth of rain fell upon each square foot of su face, in the observed time of 12 hours. Th quantity is equivalent to 69$\frac{1}{10}$ cubic inches, 2½ pounds, which, divided by 12 hours, gi little more than $\frac{2}{10}$ths of a pound per squ foot of surface per hour for the weight of t rain.

"The drains were 24 feet asunder, and ea pipe a foot in length, so that each lineal f had to receive the water falling on 24 squ feet of surface, equal to 60 pounds, or 6 gall and as the time which this quantity occupied descending through the soil and disappear was about 48 hours, its results that 1¼lb, or pint per hour, entered the drain through crevice existing between each pair of pi Every one knows, without having recour strict experiment, how very small a hole let a pint of water pass through it in an h being only one-third of an ounce per min or about twice the contents of a lady's thim

The weight of rain per acre, which fell d ing the 12 hours amounted to 108,900lbs 48$\frac{6}{10}$ tons, which on the whole piece of acres, is equal to 437$\frac{4}{10}$ tons; and each d discharged 19 tons, equal to about $\frac{4}{10}$ths of a per hour, on the mean of 48 hours; but w the flow was at the greatest, I find that drain must have discharged at the rate of times this quantity per hour, which af proof of the faculty of the pipes to receive carry off a fall of rain equal to 2½ inches i hours, instead of half an inch, a fall whi quite unknown in this climate. Half an of rain in 12 hours is a very heavy rain learn from Mr. Dickinson, that his rain-g has never indicated so great a fall as 1½ inc 24 hours; and from Dr. Ick, the curator of Birmingham Philosophical Institution, that on five occasions has the rain there exceed inch in 24 hours, during the same period years; the greatest quantity having been 1$\frac{4}{10}$ on Dec. 4, 1841. We may, therefore, con the fact of the sufficiency of inch-bore pipes agricultural drainage to be fully demonst both by experience and experiment."

On the comparative expence of deep shallow drains, regard being duly had their effective performance, Mr. Pa gives the following account of Mr. Ha mond's two, three, and four feet drai Mr. H. having stated—

"'I found after the late rains (Feb. 17, 18 that a drain 4 feet deep, ran 8 pints of wate

me time that another 3 feet deep ran five
although placed at equal distances.'"

e writer proceeds—

he circumstances under which this experi-
was made, as well as its indications, deserve
ular notice. The site was the hop-ground
e referred to, which had been under-drained
ears since to a depth varying from 24 to 30
s, and though the drains were laid some-
irregularly and imperfectly, they had been
tained in good action. Mr. Hammond,
ver, suspecting injury to be still done to
plants and the soil by *bottom* water, which
new to stagnate below the old drains, again
r-drained the piece in 1842 with inch pipes,
art to 3 feet, and in part to 4 feet, in depth,
effect proving very beneficial. The old
s were left undisturbed, but thenceforth
ed running, the whole of the water passing
w them to the new drains, as was to be ex-
ted. The distance between the new drains
feet, their length 150 yards, the fall iden-
l, the soil clay. The experiment was made
two drains adjoining each other, *i.e.*, on the
of the series of the 3 feet, and the first of
series of the 4 feet drains. The sum of the
from these two drains at the time of the
, was 975lbs. per hour, or at the rate of 19½
per acre in 24 hours—the proportionate
harge, therefore, was 12 tons by the 4 feet,
7½tons by the three feet drain. No springs
d the results. Hence, we have two
ena very satisfactorily disclosed; 1st,
the deepest drain received the most water;
that it discharged the greatest quantity of
in a given time—the superficial area of
y being the same to both drains. It would
r, then, either that the deep drain had the
r of drawing water from a horizontal dis-
greater by the ratio of 8 to 5 than the
ower drain; or that the perpendicular de-
of the water was more rapid into the 4 feet
or that its increased discharge was owing to
these causes combined. The phenomenon of
p drain drawing water out of soil from a
ter distance than a shallower one, is consis-
with the laws of hydraulics, and is corro-
ted by numberless observations on the
ion of wells, &c.; but the cause of the deeper
in receiving more water *in a given time* is not
obvious. An opposite result, as to time,
uld rather be expected from the fact of water
ing on the surface having to permeate a
ater mass of earth, both perpendicularly and
izontally, in order to reach the deep drain.
natural agricultural bed of porous soil re-
nbles an artificial filter, and it is unquestion-
e that the greater the depth of matter com-
ing such filter, the slower is the passage of water through it. In stiff loams and clays, however, but more particularly as regards the latter earth, the resemblance ceases, as these soils can permit free ingress and egress to rain-water, only after the establishment of that thorough net-work of cracks or fissures, which is occasioned in them by the shrinkage of the mass from the joint action of drains and superficial evaporation. These fissures seem to stand in the stead of porosity in such soils, and serve to conduct water to drains rapidly after it has trickled through the worked bed; it is possible, too, that in deeply drained clays of certain texture the fissures may be wider, or more numerous, in consequence of the contraction of a greater bulk of earth than when such soil is drained to a less depth. However this may be it is asserted by several respectable and intelligent farmers in Kent, who have laid drains very deeply in clays and stiff soils, that the flow from the deepest drains invariably commences and ceases sooner than from shallower drains, after rain. On this interesting and unexplored subject I hope to be able to furnish you with multiplied observations after next winter, and trust also to receive the co-operation of members of the Society in making them in different soils, and with due regard to all those phenomena which may influence the results, or be detected by them.

"The consideration of the depth of drains has been too generally limited to the mere exigencies of culture and implements, combined with the natural desire to restrict expense when the materials used were dear, and the cost of earth-work great. These adventitious circumstances have certainly tended to obscure from view the true principles on which drainage should be founded, and on which the utmost benefits to be derived from it depend. The question of distance between drains is important on the score of expense, and it will be wise to err on the right side, and keep within safe limits; but insufficiency of depth can only be remedied by a new outlay. So far as experience can illuminate the subject we know that many agriculturists have, a second time, drained their fields to a greater depth; it may, however, be doubted whether any one has taken up deep drains, and placed them near the surface, or nearer together. The system of deep drainage now pursued in Kent has doubtless been encouraged by the cheapness, lightness, and approved action of the pipe-tiles, combined with the more moderate cost of the earth-work incident to their small dimensions, and to the facility of laying them. The aggregate cheapness of the work has set the mind of the farmer free to contemplate more exclusively and attentively the perfection of the end in view; and it is well worthy of remark, that experiment and experience have rapidly induced the adoption of a system of parallel drains considerably deeper, and less frequent, than those commonly advocated by professed drainers, or in general use. I gave several instances of this practice in Kent in the report of last year, already alluded to, and it is rapidly extending. Mr. Hammond stated to you (*Journal*, vol. iv. p. 47), that he drained "stiff clays, 2 feet deep, and 24 feet between the drains, at £3 4s. 3d. per acre," and "porous soils, 3 feet deep 33½ feet asunder, at £2 5s. 2d. per acre." I now find him continuing his drainage at 4 feet deep, wherever he can obtain the outfall, from a conviction founded on the experience of a cautious progressive practice as to depth and distance, that depth consists with economy of outlay as well as with superior effect. He has found 4 feet drains to be efficient, at 50 feet asunder, in soils of varied texture—not uniform clays—and executes them at a cost of about £2 5s. per acre, being 18s 4d for 871 pipes, and £1 6s. 6d for 53 rods of digging. Communications have been recently made to me by several respectable Kentish farmers, of the satisfactory performance of drains deeply laid in the Weald clays, at distances ranging from 30 to 40 feet, but I have not had the opportunity of personally inspecting these drainages.

The following little table shows the actual and respective cost of the above three cases of under-draining, calculated on the effects really produced, *i.e.* on the masses of earth effectively relieved of the surplus water at an equal expense. I conceive this to be the true expression of the work done, as a mere statement of the cost of drainage per acre of surface conveys but an imperfect, indeed a very erroneous, idea of the substantive and useful expenditure on any particular system. This will be apparent on reference to the two last columns of the table, which give the cost in cubic yards and square yards of soil drained for one penny, at the above mentioned prices, depths and distances:—

Depth of the drains in feet.	Distance between the drains in feet.	Mass of soil drained per acre in cubic yards.	Mass of soil drained for 1*d*., in cubic yards.	Surface of soil drained for 1*d*, in square yards.
2	24	3226½	4·1	6·27
3	33½	4840	8·93	8·93
4	50	6453	12·00	8·96

"I may here observe, that Mr. Hammond, when draining tenacious clays, chooses the month of February for the work, when he lays his pipes (just covering them with clay to prevent crumbs from getting in), and leaves the *trenches open through* March, if it be drying
weather, by which means he finds the c
of the soil much accelerated, and the co
action of the drains advanced a full
The process of cracking may, doubtle
hastened both by a choice of the period
year in which drains are made, and by
management of the suface as to expose it
full force of atmospheric evaporation."

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The Farmer. London : C. Knight a
This little work is really a most exc
compilation. Containing nothing re
ably new, all it professes to teach has
the test of actual experience, and ma
nerally be explicitly received. It i
cisely such a work as landowners ma
great propriety place in the hands o
smaller class of tenants, and as may
safety be consulted by those "small
ers," scattered pretty much over the
dom, who, having retired from the
pursuits of a city life, are turning
attention to the management of th
acres which surround their "cottage
dences," in the hope that they may a
make half a rent from them, which,
payment of all outgoings, labour, &c.,
they can in reason expect. Your
farmer is not always apt to realise
profit; albeit he obtains health, which
at any time be set against wealth.

OUR TABLE.

We have received our files of American
from which we have made several extracts.
our Transatlantic brethren are earnest
pursuit of agricultural science is apparent
number and excellence of their periodicals
to the pursuits which, unless the farmers
earnest in a desire for information, wou
receive the encouragement we hope they do r
and which we know they deserve.

FAIRS FOR OCTOBER IN NORTH WA
1, Llanerchymedd, Dinasmouthy; 3, Pent
Mon; 5, Llanelion, Overton; 7 Corwe
Abergeley, Dolgelley; 12, Northop; 14,
trathway; 16, St. Asaph, Llandderfel, L
wchllyn; 18, Crickieth; 17, Llanhiael
Alwyd; 19, Llamamon in Yele, Ffesti
20, Cerrig y Druidion; 22, Hawarden;
Aberffraw, Sputty; 24, Borth, Cloyanog,
26, Aberwingregin, Llandelga, Newm
Llansannan; 27, Nantglyn, Caergwrle
Bangor; 29 Holt,,Wrexham; 30, Llandel

MANURES.

ed are the latest prices of several sorts
:—

, 16s. per qr.

Bone, 15s. per qr.

Guano, £8. per ton. 15s. per cwt.

0s. to 12s. per cwt., according to
y.

st, £6. to £6. 10s.per ton

e, £6. per ton

at the water side, 32s. 6d. per ton;
and housed, 38s. to 42s. per ton.,

f Soda, 15s. 0d. (duty pd.) per cwt.

otash (saltpetre) 26s. per cwt.

on for Turnip Fly 10s. 6d. per packet,
nt foı three acres.

f Ammonia, 24s. per cwt.

f Lime, 12s. per cwt.

£3. 12s. 6d. per hhd. sufficient for
acres.

The Markets.

T.—*We have the pleasure to announce a*
ise in the price of wheat since our last,
g in the whole to something like 3s. per
Notwithstanding the large arrivals of
hich came to hand, as usual, about the
our harvest, we think the lowest point
. *Seed time, and a disinclination, on the*
hose who can hold, to force sales, will to-
erate in our favour, and we are strongly
we shall see no further depression un-
dian exports, previous to the closing of
and navigation, should be sufficiently
affeect our markets again immediately
iritsmas. Looking, however, to the con-
of the great manufacturing districts,
e general scantiness of the potatoe crop,
price and probable supply of oats and
ing grain, we repeat our conviction that
scen the worst of it.

, BEANS, *and* BARLEY, *have not a brisk*
the latter, indeed, is quoted 1*s. per qr.*

seed market we notice winter Tares as
n London at 5s. 6d. to 6s.

prices of BEEF *and* MUTTON *there is*
nt tendency to advance; even coarse and
beasts are saleable in London upon im-
erms. Throughout the provinces prime
in a general way, worth 6d. per lb. and
though unusually large supplies at Liver-
several weeks past, have had a tendency
the markets in the manufacturing districts
under that figure.

.—*The picking is in full progress. In*
ces sales of new have been effected at
to £8 per cwt. The duty is called
00, *crops generally coming down well.*

LONDON, Sep. 23.

		Per	Qr.
WHEAT, Essex and Kent, new, red	40	46	48
White	46	50	54
Irish		0	0
White		52	56
RYE, old		30	34
New		36	—
BARLEY, Grinding		28	30
Malting		32	34
Chevalier		35	—
Irish		26	28
Bere		26	—
MALT, Suffolk and Norfolk		58	60
Brown		56	58
Kingston and Ware		60	—
Chevalier		60	—
OATS, Yorksh. & Lincolnsh., feed		20	22
Potatoe		23	24
Youghall and Cork black		19	—
Cork, white		20	21
Dublin		19	20
OATS, Black		19	20
Scotch feed		21	22
Potatoe		23	24
Limerick	19	20	21
Londonderry		20	21
BEANS, Tick, new		32	35
Old, small		36	38
PEAS, Grey		32	34
Maple		35	36
White		32	35
Boilers		36	38

SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..41
Mustard, White...... 6 7
Brown .... 8 11 per bush.

FLOUR, Town-made — 50
Suffolk.... — 38 per sk. of 280 lbs.
Stockton and Norfolk .... — 38

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		36	40
Hamburgh		36	—
Rostock		36	—
BARLEY		23	24
OATS, Brew		16	17
Feed		14	15
BEANS	—	24	28
PEAS		26	28
FLOUR, American, per barrel		—	21
Baltic		—	20

LONDON AVERAGES.

		£.	s.	d.
Wheat	5530 qrs.	2	7	7
Barley	2626	1	18	8
Oats	13484	1	1	0
Rye	373	1	19	6
Beans	725	1	14	9
Peas	405	1	15	4

SEED MARKET.

	s.		s.
Canary, per qr.	58	to	60
Carraway, per cwt.	44	to	46
Clover, red, English	—	to	—
„ „ Foreign	—	to	—
„ white, English	—	to	—
„ „ Foreign	—	to	—
Coriander	15	to	18
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000	£10 10	to	£11 —
„ „ Foreign, p. ton	£6 15	to	£7 —
Mustard, white, per bushel	12	to	16
„ superfine „	—	to	—
„ brown „	11	to	15
Rapeseed, English, per last	£23	to	25
Tares, English, winter p. bushel.	5s 6d	to	6
Foreign „ „ „	—	to	—

LIVERPOOL, Sep. 24.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ⅌ 70lbs.	7	3	8	0
Ditto, red	7	0	7	4
Irish white, new	6	3	6	8
Ditto, red	0	0	0	0
Egyptian	5	4	5	9
Oats, Eng. mealing, ⅌ 45lbs.	3	0	3	2
Irish	2	8	2	9
Welsh	2	8	2	9
Barley, Eng. malting ⅌ imp. qr.	34	0	38	0
Grinding	0	0	0	0
Irish and Scotch	3	10	4	3
Rye, per imp. qr.	30	0	32	0
Beans, English, per imp. qr.	37	0	39	0
Irish and Scotch	35	0	36	0
Foreign	35	0	38	0
Egyptian, per 480lbs.	30	0	32	0
Peas, English, per imp. qr.	39	0	41	0
Foreign	34	0	40	0
Malt, per imp. qr., fine	62	0	65	0
Flour, English, per 280lbs.	38	0	41	0
Irish	36	0	39	0
Foreign, duty-paid, per 190lbs., U.S.	28	0	29	0
Canadian	25	6	26	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	22	0	23	0
Irish	21	6	22	6
Indian Corn, per 480lbs.	28	0	30	0

PRICE OF AGRICULTURAL PRODUCE

LIVERPOOL, Sep. 23.

			Potatoes.	s.	d.
Hay, best	1s	1¼d	Short tops	1	8
Clover ditto	0	11	Red apple	0	0
Green ditto	0	3	Cups	1	9
Vetches	0	3¼	Cattle	1	6½
Straw.			Turnips pr ton	31	0
Wheat	0	4½	Carrots	0	0
Oats	0	4¼	Mangle	0	0
Barley	0	0			

WAKEFIELD, Sep. 20.

Wheat, new, red, Essex and Suffolk, 45s. 46s. fine to 47s.; Yorkshire, new white, 45s. 48s. Oats, 17s. to 21s., fine to 22s. per Barley, 33s. to 36s. Beans, 35s. to 39s.

DUBLIN CORN EXCHANGE—Sep. 2

	s.	d.		s.
Wheat, white (per brl.)	23	0	to	26
„ red do.	21	6	to	24
„ inferior, do.	0	0	to	0
Oats, feeding, new	9	9	to	11
Flour, first (per cwt.)	0	0	to	0
„ second do.	14	0	to	16
„ inferior do.	0	0	to	0
„ third do.	0	0	to	0
Oatmeal do.	10	0	to	10

CHESTER, Sep. 21.

	s.	d.	s.
Wheat, white, 75lbs.	7	9	8
Ditto new	0	0	0
Ditto, red	7	0	7
Oats, 46lbs., new	3	0	3
Grinding Barley, per 60lbs.	4	0	4
Malting ditto, 38 qts.	0	0	0
Beans, new, per 80lbs	6	6	

Cattle Markets.

LONDON, SMITHFIELD.

Sep.. 23, 1844. ⅌ st. of

	s.	d.		
Inferior coarse beasts	2	6	to	2
Second quality do.	3	0	to	3
Prime large Oxen	3	6	to	3
Prime Scots, &c.	3	10	to	4
Coarse and inferior Sheep	2	8	to	3
Second quality do.	3	4	to	3
Prime coarse woolled do	3	6	to	3
Prime Southdown do	3	10	to	4
Lambs	3	4	to	4
Large coarse calves	3	4	to	4
Prime small do	4	2	to	4
Large Hogs	3	2	to	3
Neat small Porkers	3	10	to	4

LIVERPOOL, Sep. 23.

	s.	d.	s.
Beef, per lb.	0	5	0
Mutton	0	5	0
Lamb	0	0	0
Veal	0	0	0

CATTLE IMPORTED INTO LIVERPOOL,

From the 16th to the 23rd Sep.

Cows	Calves	Sheep	Lambs	Pigs
2329	75	5244	478	2979

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

OCTOBER—1844.

O OUR CORRESPONDENTS.

ology is due for the omission of several nd replies to queries, but as we have ne pains to let our friends know what the result of the annual meetings of nost important Agricultural societies (we rly call attention to the remarks of Lord at Liverpool, upon the subject of tenant we must be held excused until next month. pe in our next to lay before our readers uable remarks upon the subject of these , and the premiums offered by them—a of vast importance when we reflect upon t good they are the means of diffusing ll arranged and spiritedly conducted.

◆

HORSES—THEIR KEEP AND MANAGEMENT.

are to a certainty more horses in-rom over-keeping than from under-. Acting upon this conviction, I een able to keep "the doctor" far ny stable door. Some farmers are pt to imagine that to keep up the on of their horses, whilst they are hard work, it is necessary to feed s though they were: this I have nsidered a fallacy, though I admit eater one to make too serious an on suddenly in their food. Every n tell how long any piece of hard pon which he is engaged, and which s all his horse strength, is likely to nd my advice is to begin a depleting system of feeding a short time before the work is finished; but it requires care that this is done very gradually. By keeping a horse just up to his work, and nothing more, you preserve him from many of those diseases which are alone engendered by over-feeding; and though a horse will stand a good deal of mismanagement in this respect, yet there is a point beyond which even the constitution of a horse will not go.

1.—In considering this subject fully, the first object which presents itself is the various kinds of food which are valuable to the British farmer for his horses.

2.—The various modes of preparing that food.

3.—The quantity necessary for the maintenance of that *condition*, technically so called, in which every horse should be whilst at work, and distinguished from mere fat, which, except as increasing the weight of a horse, is in no way valuable to him; and the benefit of this latter, in that point of view, is even doubtful, unless the quantity of muscle be increased in a corresponding degree.

There is no doubt that the heavier a horse may be, the greater will be the amount of resistance to a load; but unless the amount of muscle be proportioned to his weight, that very weight will be a decided incumbrance to him, and he will not be able to make it available in every position.

Let us take then the first object above presented to our view, viz., *The various kinds of food which are of value to the British farmer for his horses.* In some districts gorse is invariably given as winter food; in others, hay or dry clover, and oats; in others, hay or clover, and beans; in others, a proportion of barley is given during the spring; in others, vetches constitute with hay, &c., the principal food of the farm horses; and in many districts each farmer pursues a mode of feeding different from that of his neighbours—fancy dictates to some, whilst stern necessity compels others to suit their horse-feed to their means. Turnips and potatoes are both valuable as food for farm horses, given with hay or straw cut into chaff. In some places the custom of stall-feeding horses during the summer with green food has not yet prevailed to any considerable extent, whilst in others it is invariably practised—in the latter again a certain small portion of crushed oats or beans is given by some farmers with the green food, whilst there are others who give nothing but the green vetches or clover; and I am not prepared to say that more is required, although possibly the custom I have myself adopted may be well thought of by my readers, viz., to cut the clover or vetches with a small portion of good straw, which, if it has nothing else to recommend it, has the advantage of causing the same quantity of green fodder to go much further than can possibly be the case where it is not subjected to that process. But it appears to me, to have this further recommendation, that, independently of the fact that by the addition of a quantity of straw you increase the bulk of your fodder, you prevent the green food passing too rapidly through the stomach and bowels of your horses. The root of that terror to the farmer couch or quetch grass is used in Holstein, and has been successfully tried in this country as food for working horses. John Palin, Esq., o
Cottage, Flintshire, observing in his t
through the Duchy of Holstein, tha
horses looked and worked well upon
description of food, and having upo
return home found a large quantity o
root picked off some parts of his farm
it carefully stowed away, and durin
winter prepared it for his horses in th
lowing manner:—A quantity sufficien
the day's consumption was laid u
barn floor, and the soil beaten out of i
a stick; it was then washed clean, an
by the engine into chaff, and in spite
remonstrances of his waggoner, wh
clared the horses would be starved up
it was fed to them daily, and they so
came very fond of it, and grew fa
sleek—the prejudiced waggoner hi
confessing that his horses never l
better. It is a little remarkable t
India the same practice prevails ex
and for months the horses obtain little
food—the duties of the " grass-cu
being to raise the root from the soil
prepare it as I have described. (
continued.)—O.

◆

THE REPEAL OF THE MALT

It is not merely on behalf of the British
that we advocate the repeal of the Malt
it is not because we feel satisfied that wi
for our general cattle food we shall soo
to encumber our soils with oats—that
keep will be rendered materially cheape
our labourers will get a cheap and who
beverage at their own homes, which wil
them additional strength, and thus ren
labours of the field less irksome to t
it is not for these not unimportant
tages alone, that we advocate the repea
Malt Tax; but it is that the whole com
will benefit to the full as much as the
Animal food, being cheaper fed, will b
in price in the hands of the butchers.
that important item in the household e
of rich as well as poor, will be so red
price—so placed within every man's
that the industrious labourer will, u
return home, be regaled at his own
with a cup of the healthful beverage,
by his dame, and be thus induced to
amongst his little ones rather than

r-shop for his customary refreshment. It or the moral good we anticipate, as well as the substantial comforts which will be con- red, that we advocate a repeal of the Malt x—it is that, in our opinion, a change will ne over the habits of the people, so advan- geous to the community, that a serious re- onsibility rests upon the government for ery day's delay in effecting *this repeal*, before ich all others sink into insignificance.

It is in our gaols and our union houses that shall soon see the good effects of placing in e hands of the poor that which shall effectu- ly wean them from the haunts of riot and nkenness, by leaving them no excuse for ng there—by giving them at home a better ticle for their money, and more of it than ey can get from home—by raising up, in rt, a direct competition between the honest k at home, and the tap of very doubtful ntions round the corner.

We hail, therefore, with heartfelt joy, the ptoms of an advance in the right direction, the formation, in London, of a committee the purpose of urging upon the government consideration of this measure; and when find upon such committee the names of ker of Writtle, Ellman of Beddingham, F. bs of Marks Hall, &c., well-known to the cultural public, we do not despair of a dy and complete success to this very use- agitation.

◆

E WEATHER AND THE CROPS.

seed time is most propitious, and we satisfied that a greater breadth of wheat be this year sown in the British islands n in any previous year within the recol- tion of most. Of green crops for early ding too, the great want of hay and der straw will have induced an exten- d seeding; in some counties the breadth der winter vetches is said to be quad- led, and the price of good seed to have vanced to a figure we have been unused for at least 30 years.

Rape, too, is not looked upon so shily by ck farmers as it has been, and although secure an early cut this plant requires a uch earlier seeding than vetches, yet for wes with lambs and dairy stock we incline the opinion that it will be found more seful than vetches, as inducing a greater low of milk.

Turnips will be the scarce article we have all along predicted. The growing weather we have had during the past month has, however, forced them into top, and in many places we find them allowed to grow in the hope that this part of the plant may yet turn out useful.

Potatoes will not be so light a crop as we predicted: from those parts of the country where the raising has commenced we hear favourable accounts, of the cattle varieties particularly, for which, although by no means a full average crop, the opening price will not, in our opinion, be very much greater than on the general run of seasons.

The country generally is full of grass and though upon thin soils the pastures have not yet entirely recovered the effects of the severe drought, yet should the weather continue open upon dry or well drained grounds, there will be plenty of feed for some time yet.

◆

A LARGE POTATOE.

A Potatoe, weighing 3lbs. 3oz. avoirdupois, was sent to our office a few days ago, and we were challenged to produce its fellow: it may be as difficult perhaps to do that as to account for the cause of the singular growth of this collection of tubers, for such it really was, although growing firmly together. The number of potatoes, supposing they had not grown together, would have been fourteen, eight of them being well-grown roots, and the remaining six fit only for sets. Our mode of accounting for it, is, that being grown in a close clay soil, the roots were bound so firmly together, that on expanding in their growth they pressed upon each other, more easily than upon the soil, and thus grow one into the other, and were taken up as one, which to all intents they were. The weight of crop which they would produce, supposing the roots to average fourteen potatoes each, of a size corresponding with those which had in this case so singularly grown together, would be 28lbs. or one quarter each square of one yard.

◆

ON SMUT OR BLACK IN WHEAT.

Mr. Foster read the following remarks at a meeting of the Cullompton Farmers' Club held at Cullompton:—

In reference to the "smut in wheat," it is well known the farina, or flower of the grain, is converted into soot-like powder, and that the destruction of the husk generally follows, which serves to show the malignancy of the disease. This powder when thrown on water and examined by a powerful magnifying glass is found to consist of myriads of globules filled with fluid, and when we reflect that each small speck is capable of producing a perfect fungus, we may cease to wonder at the extensive ravages which are sometimes produced by this disease.

It has been considered that the soil is mainly instrumental in generating this noxious fungus; where the former is rank and very luxuriant, a forced or unnatural growth of the plant has taken place, and instead of a healthy stalk, it has come up with a tendency to disease, which under favourable circumstances for its development has resulted in a part of the ear being affected by the smut.

The opinion which now obtains is that the disease is produced by the minute seeds of a parasitic fungus which, being carried by the wind, enter the plant by the fine openings of the epidermis or outer skin and are propelled by the rising juices to every part of it, and eventually convert the recently formed grain into an useless and injurious mass.

Blue-stone is now most usually purchased by the agriculturists, and, when properly prepared, will destroy the small globules, and render the seed fit for sowing. It may be stated that a most vile article is now manufactured and sold as blue-stone.

We recommend, in conclusion, that the solution be of sufficient strength to destroy the noxious seed without injuring the sound grain—that it be steeped for eight or ten hours, and that the grain so steeped be always dried in the sun previously to being sown.

◆

Montgomeryshire Farmers' Club.— The anniversary was held at Newtown, on *the 11th of* October. For the ploughmen's *prizes 11 started,* and the work gave satisfaction. The stock was not numer
some of them merited the encom
the judge, Mr. S. Matthews, of M
near Shrewsbury. The winner of t
of Swede turnips, was W. Edwards
Rhiewearth, many thousands of wl
ceeded 30 inches in circumference.

◆

STALL-FEEDING.

I **find** it impossible to read the acc
the malady which is now proving
tructive to horned cattle, without
desire to contribute towards its ab
I take the liberty of suggesting whe
immediate adoption of housing a
feeding of cattle may not prove a
tive, particularly if steamed food
In 1812, and from thence to 1818,
tensive and excellent agriculturist,
J. C. Curwen, Esq. M. P. of Wo
Hall, Cumberland, in communic
the Society for the encouragement
Manufacturers and Commerce,
strated, and corroborated by the t
of other agriculturists and dairy
followed his plans, from having w
their success with him, the adva
stall-feeding, and steam-feeding
cows for dairy purposes and cattl
tening; with respect to cows, thos
tages were, a great improvement
condition, health, and milking;
state after becoming dry, when a fe
feeding makes them fit for the
with very little loss from the fi
with respect to stock, there were e
turity, diminished risk in rearing,
in the cost of feeding, besides the
of an additional quantity of man
1814 seventeen calves were reared—
horned or Durham, and 6 Ayrs
one was lost, nor were they subje
complaint; in size they were little
to those of double their age; so
their condition that one of the
heifers of 18 months old was b
The live weight was 55 stone, of
the stone. The carcass was 31 sto
and the loose fat 2 stone 9lbs., it w
at the Workington Society, the ca
teemed particularly beautiful, and
highly approved by the members
it. The Durhams were in muc
condition, and would have killed
at least; all costly food was rejec
produce of two acres, divided betv
nip and clover, abundantly suff
support a beast till 2 years old; the
created was considerable.—*J. S.,*

Prize Essay on Pleuro Pneumonia.—ie extensive losses occasioned by the idemic amongst cattle, entitled *pleuro eumonia*, induced the Directors of the armers' and Graziers' Mutual Cattle Inurance Association to offer a prize of wenty-five sovereigns for the best essay n the nature and treatment of the disease. Ve are informed there were nine competiors for the prize. Three leading members f the veterinary profession were appointed adges, the names of the competitors being nknown to them. At the meeting of the oard, on the 3rd of Oct. the award of the adges was read; and the sealed paper, ndorsed with the motto of the prize essay ithout, and containing the name of the riter within, was opened, and found to be at of Mr. John Barlow, Jun., Veterinary rgeon, Oak, Wilmslow, near Manchester.

Food for Cattle.—The Lords Commisioners of the Treasury have given permisn for upwards of 20 tons of the lotus nut be admitted without payment of any duty Earl Spencer, which he is about to imrt for the purpose of the article being ed as an experiment as food for cattle.

Crushed Gorse for Feeding Cattle. At the annual meeting of the Worcesterire Agricultural Society, Mr. Spooner, P., strongly advocated the system of g crushed gorse for feeding cattle. He used it himself for upwards of twenty s, and it was very generally used in the of Anglesey. He remarked that it s a very cheap and nutritious food for ttle, and expressed his surprise that its erits were not more generally known. e hon. gentleman explained the best eans of crushing the article, and intiated that a really efficient machine had ot yet been invented for the purpose, but at it was crushed in the Isle of Anglesey y means of hammering it between inclind planes, the work being performed by omen, and the cost not exceeding one enny per bushel.

Thin Sowing.—I was induced last spring o try Mr. Davis's plan on a small scale with Scotch potato oats without dressing. The following is the result:—On two lands containing 1 rood and 6 perches, seed at the rate of 2 bushels per acre, drilled 12 inches between the rows, produced 2 qrs. 3½ bush.; weight of oats, 41 lbs. per bush.; straw, 23 trusses, 4 lbs. The adjoining two lands, with the remainder of the field, sown at the rate of 3 bush. per acre, 9 inches between the rows, produced 2 qrs. 1 bush. 1 pint; weight 41½ lbs. per bush., and 20 trusses 2 lbs. straw; which shows an advantage of the thin sowing at the rate of 1 qr. 1 bush. of oats, and 10 trusses 22 lbs. straw per acre, besides the difference of seed. The thin sown oats were not so ripe when cut as the others. The increase of oats, straw, and saving of seed, will amount to about £1. 15s. per acre.—*S. R. Gard. Chron.*

◆

PROFESSOR LIEBIG.

On the 11th of October a public dinner was given in Glasgow to Professor Liebig, as a mark of the high sense which the inhabitants entertain of his eminent services to science. The health of Professor Liebig having been drank with great applause, the learned gentleman returned thanks at some length, and observed:—"Science teaches us to recognise the food of plants, and the sources from which it is derived. This knowledge alone makes us the true masters of the soil—the lords of our capital. We can now see where we are guilty of waste, and where we are too sparing. The great truth that animal manures are nothing else but the ashes of the food produced from our fields, consumed or burned in the bodies of men and animals, has given the chief direction to all modern improvements in agriculture. Who would have thought it possible a few years ago that gas-works would yield a powerful manure? We now know on what cause the exhaustion of our soils depends—it is the most precious ingredients of the soil which we remove in the crops, and thus impoverish our fields. By analysing the ashes of plants, we learn that we must add or replace, in order to restore the original fertility of the soil. Africa and Peru supply us with the mineral elements of bread and flesh in the shape of guano, and chemical works now produce the other mineral substances which are indispensable to turnips and potatoes. It is evident to all that the present age has entered upon a new path; we have now to do with the real, not with the imaginary value of the manure. As we have learned how to measure the value of an acid or an alkali, so we can now ascertain the true value of a manure. This therefore is precisely what we must expend on the soil, in order to obtain a profit; for the capital of the farmer consists of his labour and his manure. Much certainly remains to be done. According to the geological character of the soil, the farmer must decide on the means to be employed for its improvement. The mineral food of the plants of all countries must be ascertained by the analysis of their ashes: we must determine which substances are essential, which accidental—we must endeavour to find out in which plant one ingredient or another may be replaced, as lime by magnesia or potash by soda."

◆

ENGLISH GUANO.

We have been favoured by Mr. Brain, the guano manufacturer, with Messrs. Mitchell and Field's analysis of his manure, of which the following is a copy.

No. 345. Oct. 10th, 1844.

This is to certify, that we have examined a sample of English guano, sent by Mr. Brain, of Stamford Street, and find it contains in 100 parts,—

Silica	1..62
Ammonia	5..60
Phosphoric Acid	13..63
Sulphuric Acid	20..40
Lime	14..42
Water	10..66
Organic matter	16..84
Potash	3..65
Soda	4..93
Chlorine	2..89
Magnesia	3..42
Carbonic Acid	1..61
Oxide of Iron	0..33
Oxide of Manganese	a trace
	100..00

Signed JOHN MITCHELL.
FREDERICK FIELD.

5 A, Hawley Road, Kentish Town, London.

In examining the above the reader will be struck with the analogy of the constituents there shown to exist in the Manure in question with those of pure Foreign Guano, not only in their nature but also in the quantities: indeed we have seldom found so much Phosphoric Acid (so essentially necessary to vegetation) in any specimen whatever, the nearly total absence of siliceous and sandy matter and the presence of large quantities of highly fertilizing substances rich in ammonia recommend this Guano to the Agricultural world. Inasmuch as all Foreign Guanos are not of the same composition, disappointments have frequently occurred, but this being always manufactured from the same formula with the purest materials cannot fail of affording the same results, from its sameness of composition and its uniformity of fertilizing power: indeed we understand from Mr. Brain, that so fully is he determined to accomplish this end that he has the constituents of his Guano before mixture and the manure after subjected to a perfect analysis by Messrs. Mitchell and Field, whose extensive connexion as Analytical Chemists among the Manufacturing and Agricultural world, give them every opportunity of ascertaining the value and purity of all substances used by Farmers as Manure, whether of the Organic or Inorganic kind.

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DARLINGTON FARMERS' CLUB.

THE members of this club held their October monthly meeting on Monday last the 14th ult., at the offices of Mr. Thos. Dixon, land-agent, their secretary, the subject under discussion being "*The best method of preserving Turnips through the winter, and whether it is desirable to draw them from the land, both as regards the preservation of the Turnips and keeping the land in condition.*" Henry Chapman, Esq., the chairman, introduced the subject, and during the course of the discussion he also read an able communication on the subject, from the pen of Mr. George Davidson, a well-known correspondent of the club. The matter was discussed at considerable length, and the different methods of storing turnips duly considered—the members present being unanimous in opinion that in every case where turnips are stored either in houses, in camps, or otherwise, in considerable quantities, it is desirable to pay attention to the manner in which the turnips are prepared for storing. The top and roots ought to be taken off together with as much dirt as possible, in order that the turnips be stored clean; at the same time being careful in cutting off the tops and tails not to injure or wound the bulb or turnip, as by that means, if wounded, its juices are exhausted, and it is more liable to decay. With regard to storing or preserving the globe or common white turnip, it was only considered expedient, so far as to have a regular supply always on hand to serve the cattle in case of severe frost or wet weather, and on that account it becomes necessary to have three or four weeks' provision beforehand, else it is generally found that white turnips answer best, and feed to most advantage when fresh drawn from the land: besides, when stored, they do not generally keep well for any length of time, and in no case should they be stored later than the middle of December.

With regard to Swedes and other hardy and late winter turnips, the members were of opinion that it was in numerous cases advantageous to draw them from the land and store them, both as regards preserving the turnips and keeping the land in condition, and free from exhaustion. Swedish turnips are of a hardy nature, and when healthy stand the winter's frosts well, but in very early spring, when vegetation takes place, both the turnip and the land begin immediately to suffer—the bulb of the turnip begins to turn into woody fibre, and the roots begin to draw upon and exhaust the land without benefiting the turnip; therefore, under these circumstances, it was considered desirable to take advantage of a fine dry season, not later than the commencement of February, and draw from the land and store, as far as practicable, all the later and hardy kinds of turnips for spring use. Where parties have not the advantage of sufficient turnip houses and sheds for storing their turnips it was considered a good plan to pile them up betwixt ranges of stackbars placed about four or five feet apart, and lined with straw, the turnips then filled in to the height of four or five feet, and then thatched or covered over with straw: in this way they keep pretty well.

Upon dry land where it may not be convenient in all cases to have the spring turnips drawn from the land, a cheap method of putting a partial stop to vegetation was named by one of the members, which was as follows:—Go over the rows and pull all the turnips nearly up by the roots, and then leave them in their former position; by this means vegetation is delayed, and yet the turnip keeps pretty fresh. Another point of very considerable importance was also touched upon, viz., the carting turnips off the land: it was considered that too much care could not be taken to have this done when the land was in a proper state, as in many instances where the turnips are carted off whilst the land is in a very wet state, there is no calculating the injury done to the land.

The subject fixed for discussion at the November meeting is "*The proper time for ploughing, preparing, and manuring land for Beans and other crops.*"

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SHROPSHIRE AGRICULTURAL SOCIETY.

The annual meeting of this society took place on the 8th of October in Shrewsbury.

The Ploughing Match.—The judges decided that Mr. Gill's two ploughs had finished their work in the best manner.

The show of stock was, on the whole, good, and many lots, both of cattle and sheep were first-rate. Some fine specimens of Herefordshire bulls were exhibited: among the most striking were Mr. Gough's of Gravel Hill, a yearling, which obtained the premium, and was also winner of the prize for the best bull of any age or breed; a short-horned yearling, Viscount Hill's; Mr. Meire's of Norton, Mr. Allen's of Unkington, and Mr. Crane's of Shrawardine. A very fine short-horned bull calf, nearly white, 7 months old, belonging to Viscount Hill, was much admired; good specimens were also exhibited by Mr. Meire, Berrington, Mr. Oatley, Wroxeter, and Mr. Walford, Cronkhill. The show of steers was capital; among the best were those exhibited by Mr T. L. Meire, Cound, (which obtained the first prize,) by Mr. J. Meire, Uckington, (second prize.) There were also some splendid fat cows, fat oxen, and heifers. A pen of five yearling Southdown ewes, sent in by Lord Hill, excited general admiration, and obtained the first prize. The show of Leicesters was also very good, as was that of rams and wethers. There was a good exhibition of Pigs, some of the best-conditioned of which belonged to labourers. The extra stock consisted of a yearling Hereford bull, belonging to Mr. Meire, Uckington; a very fine short-horn cow, of the Durham breed, belonging to Mr. James Wilding Mardol, Shrewsbury, two fine rams, sent in by Mr. Cotes, Woodcote, and a pig of the Chinese breed, belonging to Rice Wynne, Esq., Shrewsbury. There were but a few horses exhibited, and what were on the ground were chiefly draught stallions. The exhibition of agricultural implements embraced all the most recent improvements in ploughs, thrashing machines, oat and bean crushers, &c.

The following were the successful candidates:—Mr. Thos. Austin, of Montford; Mr. Crane, of Shrawardine; Mr. Oakley, of Wroxeter; Mr. Gough, of Gravel Hill; Viscount Hill; Mr. W. Allen, Unkington; Mr. T. L. Meire, of Cound; Mr. J. Meire, of Uckington; Mr. Joseph Meire, Norton; Mr. John Griffiths, Cound; Mr. Morris, of Perrill; Mr. Salter, of Brompton; Mr. S. Matthews, of Montford; Mr. Bickerton, of Newton.

The following gentlemen addressed the meeting:—

The Chairman (Hon. Robert Clive, M.P.) said, what he would recommend farmers to adopt as their motto was, "Practice with Science;" let them be cautious in adopting new suggestions; but, having once made up their minds on any particular subject, let them carry through the experiment on such a scale as will do it justice and secure it a fair trial. Under *the advice of* Mr. Smith of Deanston, the gentle-
man from whom he was happy to say
acquired all his agricultural knowledge,
been of late working a farm with great
He had on that farm good crops, and no
and notwithstanding the difficulties unde
every farmer had been labouring this y
could boast of twenty acres of excellent
out of a field of thirty acres. In one fiel
with barley, he certainly had failed;
could account for that; the land was po
the long continued drought checked the
of the barley; but he had no doubt t
year, when he should take care to procu
seed—for barley was a crop he had not
paid much attention to—he would be
ful in that also. He would impres
farmers that his system had been su
and draining; draining first, and su
afterwards. He knew there were many
objected to subsoiling on account of
He would recommend persons who c
afford a large outlay at once, to do onl
of their farms at a time, and carry
year to year; this may be done, in his
as well by four horses as by six; and he
the result would be the same in the en
next observation would be regarding
The good to be effected by good drai
not to be told. He was one of those wh
might be allowed to say before them-
opinion that agriculture was yet in its
He was of opinion that so many and su
improvements were to be expected, not
implements, but in agricultural chemis
they were only now entering upon a new
Let them, then, have activity, a goo
and he firmly believed that double th
produce must be soon realized in this
if they but steadily endeavoured to
The tile machine which he had the
that day of producing on the show grou
one of Clayton's make, and to the tile
would draw their attention. The s
—which was about an inch and a q
diameter—would, he was informed,
perfectly as the large one. With ref
the large tile he could say a better coul
produced, for the junction of one with
of the large tiles affords means for the
get in; and he believed that tile could
ufactured for ten shillings the thousand
providing that proper clay is employ
also said that most of the gentlemen
were aware that there was an intenti
tablishing an agricultural college in Gl
shire, the object of which was to educa
men, from 14 years of age upwards,
render them capable of becoming good
farmers. It was his intention, if th
should be erected, and he should be m

e a subscriber, to select as many pupils
ld from amongst the sons of farmers,
ive them the benefit of the admirable
they would receive at that College.
qualification to be required was, that
idates be steady young men, indus-
nclined; and if any young man should
him recommended in those respects,
gentlemen he had then the honour of
g, he would do his best to get him ad-
He felt convinced that by the estab-
of such a College, more good would
han he could express. If a young man
t establishment, and makes himself
d with all the valuable knowledge it
rt, he was sure that after four years'
hich, he believed, was the time speci-
will have acquired sufficient knowledge
ience to render him capable of con-
a farm himself to the greatest advan-

ANEY said, one of the greatest ex-
tending draining, was the cutting of
Clayton's tiles; but this objection was
reat part overcome by a plough used
Another objection raised to draining
clay must be carried away, or spread
land itself; it being generally con-
at in tenacious sub-soils it is necessary
way the cuttings. Now, Mr. Smith
and again assured him (Mr. Slaney,)
was entirely unnecessary. He said
drain be made a proper breadth and a
epth, you may retain the clay in the
cause when the drain is properly dried,
t prevent the rain to descend; it was
vn that the main quantity of rain does
nd straight, but side ways.

nt **Clive** said, he would draw from the
circumstance a proof that Agricul-
ication was advancing, and that as the
d management improves, cottage im-
t will keep pace with it; for they had
seen that two of the labourers who
rizes were servants to farmers who were
cessful candidates; a proof that the
re and diligence which they had seen
in their masters' farm-yards, they had
in their own more humble sphere,
also served as an incentive and a stim-
xcel.

arl of **Powis** said, he believed it was
son who had said that one of the great-
factors to mankind was he who caused
s of grass to grow where only one had
efore; and he was sure that in the
eason that that individual who may be
y care and attention to that purpose to
e load of hay do duty for two, would
he highest praise.

PRESTON AGRICULTURAL SOCIETY.

On the 12th of Oct. the annual exhibition was held, and there was a numerous muster of gentlemen, farmers, and others interested in agriculture. The horses exhibited, with but little exception, were inferior; but in point of excellence the cattle were not to be surpassed. W. Eccles, Esq., T. Birchall, Esq., and A. Bannerman, Esq., exhibited some beautiful beasts. We also noticed a heifer which won a prize and a sweepstakes, and a young calf, the property of Mr. Thomas Chapman, of Hutton. The bulls were good. The pigs were numerous, and consisted of first-rate specimens; the boars and sows being quite superior. There were some very fair samples of roots; Mr. J. Pemberton, of Penwortham hall farm, showed six blue potatoes, which weighed 12lb. 9oz. Mr. Whitehead and Mr. Lewis had on view their excellent collection of agricultural implements and machines; Lord Ducie's drag and the Beverley Clod Crusher, had been sent from the farm of G. Jacson, Esq., of Barton Lodge. Mr. Aaron Berry, of Longton, exhibited two or three specimens of ploughs; and Mr. Heaton, Chorley, had in full operation a model of a patent pump, called the self-acting anti-friction pump. The judges of stock, roots, and implements, were Mr. Forrest, of Stretton, near Warrington, Mr. Eastwood, of Burnley, and Mr. Dawson, of Gronant, near Holywell.

We notice the very excellent practice which prevails at the meetings of this society, to set down for discussion certain practical questions relating to agriculture, which gives the society the useful character of a Farmers' Club. Upon the present occasion the subject was—"*Why are much higher rents paid in parts of Scotland than in England, and the tenants there much more affluent?*"

Colonel **Rawstorne** observed that this subject was most important; and if ever there was one that called for their serious and earnest attention, if ever there was one in which their interests were most materially concerned, it was the one now proposed for consideration—the comparative merits of Scotch and English farming. He could show them that the whole

of the rents of the landowners now present may be doubled, that some of them may be even tripled, by adopting a different course from that now pursued; and he thought they would agree with him in the truth of his assertion. After quoting Mr. Greg's well known pamphlet upon this subject, in which, amongst other things, it is stated that the rent of Lothian farms is from £3 to £7 per acre, the speaker continued—It may here perhaps be said, that this is owing to the land being of extraordinary fertility, or that it is near the large town of Edinburgh; but he (Mr. Rawstorne) could produce another instance of a farm three miles from Dunbar, called the East Barns Farm, which, being 400 Scotch acres, or 480 English statute, is let for £2,800 a year, or about £6 the acre, and which did at one time let for eight pounds the acre. In what manner then can this be done? It is generally known that the whole land there is under the plough, and as no one, he thought, will dispute, that if you take two pieces of land of equal breadth and quality, and infinitely larger produce may be raised from the ploughed land than from that in grass. There is nothing so bad in farming as growing bad crops of corn, which is too common with us; but here the whole crops being in drills, the produce is proportionably large. But the chief profit is to be made through the green crops. He would illustrate this by what happened to himself this year. A crop of good clover was cut twice; and he was sure one acre of it was quite equal in value to three acres of poor pasture land on the same farm; or, in other words, better worth £3 an acre than the other £1. But there are some grasses, such as Italian ryegrass, that may be cut three times, and Lucerne four times. The latter, therefore, may be as well worth £6 an acre as the other £1. Two crops also may be sown in the same year; winter vetches, if sown in September, may be cut in May. This will give time for a crop of turnips to follow; or these might follow a crop of early potatoes. Sixteen cows may be kept where one is at present; or, in other words, land under one system may be better worth sixteen pounds the acre than under another one pound. Let them now look into the state of farming in this district. If there is one thing more than another that has brought our farming into disrepute, and has given us, too, a bad name, it is the miserable state of our grass land. Go wherever you will—travel east, west, north, or south, and you are forcibly struck with the appearance of the poor pastures. The whole of these would have to be broken up, well worked with green crops, and then either kept under the plough or laid down again with good grass seeds, before any great change can be effected. Here a material question arose: are the farmers in this district qualified for
out the Scotch system to the extent in
is carried out by them? To do this fu
efficiently, three things are required;
raising of manure; 2nd. capital; a
skill and intelligence. In regard to t
if there was anything in which our
were deficient, it was in the making of
and in which they rather throw awa
advantages than make the most of the
say nothing about their selling off th
and straw, from want of a sufficient
they turn their cattle out into the ope
during the whole winter time, from whi
land is trodden into puddle, and all the
wasted. Mr. Clifton has set a laudible e
by building for his tenants enclosed farm
which is a step in advance towards a
system; but he had yet to see the fa
system carried on as is the case in m
proved districts. Mr. Pusey has very p
said, that the feeding of bullocks is a
for converting straw into manure. Not
this kind is carried on in our farm yard
a lean stock to be seen in them well
with pigs rooting amongst the straw.
better method be adopted of raising an i
quantity of manure, it is in vain to atte
approach to the system alluded to; f
our mixed husbandry, the whole ma
taken to the ploughed land, and the g
prived of its proper share, very seriou
must arise from it. With regard to ca
must be allowed that our farmers do not
the necessary funds to answer the large d
that would be made upon them on a fa
arable state. And here comes the qu
long leases. It is clear that in Scotla
leases are granted; and it is supposed
that that has been the original cause of t
farming there; but he must own he wa
led to believe that the long leases wer
owing to the good farming than the good
to the long leases. What is the use an
tion of a long lease? To give security
investment of capital, and to give an a
return for the outlay expended. B
would that be where there is no capital e
It is well known that our farmers live i
indigent manner, that they work out a
difficulty, that many of them are in arr
that at the end of their term few of the
made any material saving. What, then
be the advantage of giving a long ter
inducement to expend money, when
nothing to expend? Out of nothing,
comes. Thirdly: as to intelligence, the
of the late generation could, few of th
and write, and those of the present
highly instructed. Why are the Sc

to our own? Because they are an
people, and we are quite the reverse. If
; land agents and bailiffs, or if you want
leners, you dont seek for them in your
hbourhood, but you go to Scotland for
ls long as our own farmers remain in
rate condition in which they are at
ll enlightened views must be abandoned.
would be so likely to remove the dark-
ignorance that prevails as a model
h an agricultural school attached to it.
would sharpen their intellects, and
road to knowledge; the other would
n that knowledge carried into practice.
is another part of the subject which
st as important as the one he had just
upon; and if he could show that the
enants are in affluence, and many of
king large fortunes, whilst ours can
pport a precarious existence, he thought
ld still be more in favour of the plan
. Mr. Dickson, of Harwich, a large
roprietor, informed him lately of a
his, who, on his lease expiring, gave
) a year more rent, and informed him
had made £10,000 during his term.
entioned one instance where £100,000
made. This he could understand, and
ustrate it thus:—Suppose a farmer
ke 1,000 acres on Clifton Marsh; the
it for this land is about £2 the acre.
uld be made to pay £6 the acre, like
Barns Farm, (to say nothing of the
rofit,) there would be the saving of
isand pounds a year, which, in twenty
h compound interest, would amount to
). The same authority mentioned,
e last ten or twelve years the Duke of
h's estates had increased in value from
hirty-five per cent. You may discuss
observed the Colonel, in conclusion.
es so much as a matter of course, that
ly needs discussion. Let that be the
every improvement; but graft upon it
g quite as material, the thorough and
novation of your moss land, and the
proved tillage of that under the plough.
ing, you may begin to rival other more
l districts, and may thus equally benefit
llord and tenant.

OTT had listened with great attention
el Rawstorne, but he considered his
highly coloured. He differed from
he subject of leases: leases were the
good farming, and not good farming of
In 1702, at the time of the Union, the
rere behind; in 1730 or 1733, leases
roduced of nineteen or twenty years
and they went on progressing and im-
until the whole of the land was occupied, and he had no hesitation in saying Lancashire was fifty years behind East Lothian, such as it was in 1792. Since that time great improvement had been effected. There was a great quantity of bad grasses then; now there were few or none. He had prepared some statistics comparing the year 1792 with 1836. Gladsmuir parish of which he could speak from his acquaintance with it, consisted of 5853 Scotch acres or 7000 imperial: in 1792, 3000 acres of this land were arable; in 1836, 3614, showing a gain of 614 acres. In 1792, the quantity of grass seeds was 500 acres, in 1836, 1446; of natural pasture 1792, 1600 acres; in 1836, just 12.—In 1792, the white crops consisted of 2000 acres; in 1836, of 2660, exhibiting a gain of 660 acres. In the first period the amount of green crops was 500 acres, in the latter 848. The extent of pasture sown with clover and rye grass in 1792, was 200 acres; in 1836, 1146 acres. He next came to the mode of working: in 1792, 106 ploughs were used; in 1836, only 86, 20 less than in the former period. In 1792, 240 horses were employed; in 1836, 172, less by 68. In 1792, the gross amount of rent was £4500; in 1836, £9000, or nearly doubled. In 1792, the total population was 1880; in 1836, 1652, which did not show very great increase. Mr. Scott then enumerated the different trades in the two periods, from which it appeared there were, in

	1792	1836		1792	1836
Ploughmen	..140..	86	Colliers	.. 40..	62
Farmers	.. 22..	22	Labourers and Contractors	.. 77..	120
Carpenters	.. 8..	17	Resident Proprietors	.. 3..	1
Smiths	.. 9..	9	Road Makers	.. 6..	30
Weavers	.. 20..	2	Butchers	.. 0..	1
Shoemakers	.. 26..	4	Bakers	.. 1..	2
Tailors	.. 7..	4	Schoolmasters	.. 3..	5
Masons	.. 4..	2			
Millers	.. 4..	1			

In 1792 the number of milk cows produced were 126, in 1836, 107; black cattle in 1792, 134; in 1836, 500. But this was not all; by the introduction of artificial grasses they were enabled in 1836 to rear 2500 sheep, but on the poor pasture of 1792 only 100. In the latter year there were 2100 acres of natural and artificial grasses. The quantity of black cattle then maintained were 134; milk cows, 126; horses, 285; sheep, 100; total, 757. This proved that it required in 1792, 3½ acres of grass to support a bullock. In 1836 they find 1458 acres of grass maintaining 500 black cattle, 107 cows, 228 horses, and 2500 sheep—total 3335. Thus the produce of every acre of grass land was equal to the support of a bullock. He might state that in 1792 there was only one farmer in the habit of feeding cattle; in 1836 all did. The fallow land in 1792 consisted of 480 acres; in 1836, of 714, or one third more; in 1792 there were 214 farm houses, in 1836 only 172, or one third fewer. When they took into consideration the immense increase of work occasioned on a farm by the increased quantity of green crops sown and the most laborious nature of their management, they might infer that one pair of horses, in 1836, performed double the quantity of work that a pair of horses did in 1792. This could only be accounted for by their superior quality and condition. Mr. Scott then proceeded to say that the tenant farmers had much to do in this country, but landlords had much to do also. It was not to be expected that tenants could invest their money without some security, for in all money transactions security was necessary. Hence the tenant was perfectly justified in requiring a guarantee before he laid out his capital. A co-operation ought to exist between landlords and tenants. He quite agreed with Colonel Rawstorne, that when the land was worn out, it should not be laid down with natural grasses, till it was got in good order.

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THE LIVERPOOL AGRICULTURAL SOCIETY.

THE fourteenth anniversary show of this society was held on the 22nd of October, in Liverpool. The cattle show was superior to that of last year. There were some very prime bulls, bull calves, milch cows, heifers, fat cows, and young cows. The show of stallions was rather indifferent; there was plenty of bone and flesh, but a great want of symmetry and action, with power. There was a beautiful gray saddle horse, belonging to Mr. Hustler, of Orrellhall. There was a considerable number of draught horses, amongst which was a pair of very powerful grays, and a very fine black powerful gelding. A few brood mares and colts were on the ground. The show of pigs was never excelled either in number or quality. The sheep were more numerous than formerly, and there were several excellent specimens of Leicesters and South Downs. Mr. W. Ashcroft of Halsall, exhibited good specimens of mangel wurzel, weighing 26 lbs.; good sound Swede turnips, 28 lbs.; white Waterloo wheat, of excellent quality; and some chicory, the seed of which he has this year succeeded in bringing to maturity. Mr. W. Taylor, of Bootle, showed some sound drum-head cabbage; one weig 54 lbs.; he had also some good ma wurzel. There were some fine Swede nips, and mangel wurzel, weighing a 30 lbs., belonging to C. Scarisbrick, There were a large number, and a g variety of ploughs and other implem adapted for agricultural purposes. Mr. H. Peake, of Liverpool, had several specimens of iron hurdles, gates, &c.

Cinder Draining.—Mr. E. J. Pember of Sankey, who has obtained prizes this year and last for draining, and was formerly an inspector for the soci exhibited a model of his cinder drains, the purpose of comparison with a tile dr It appears, from experiments made by gentleman, that a drain thirty inches d with cinders ten inches deep, can be m for sixpence per rod of eight yards; when the drains are 4¾ yards apart, cost will not be more than £3 2s. 6d. statute acre. Cinders, laid ten inches will absorb twice as much water as a will contain which is 3½ inches wide an inches deep. Mr. Pemberton has dra forty-three acres within the last three y with 38,404 yards of cinder drains, and yards of tile drains, the latter being for the mains. The effect has surpa his own expectations, and is stated t particularly worthy of notice.

It was the intention of Mr. Ledge have resigned the office of secretary, at a meeting of the committee, he was duced to act for another year, as j secretary with Mr. White, of Warring brother of the late Mr. White, the orig and indefatigable secretary of the soci

At this meeting the following rem fell from Lord Stanley, whose attentio the interests of this Society is beyon praise.

The CHAIRMAN (Lord Stanley) spea of Guano and other improvements sai is not, however, to manures like this a that I look for much of the substantial important improvements that have effected. Every where I see old us fences disappearing,—fields enlargin improved modes of agriculture adopte every where I see going on, with imm rapidity, that which I must impress o of you who are connected with the l as the basis of all improvement,—deep and thorough draining of the land—and not here alone, but throughout all England, it is most remarkable to every one; going along with railway speed from one part of the kingdom to another, the eye is everywhere struck with those promising red heaps which bespeak future exertions for the support of agriculture, and promise a well-deserved reward for future exertions. Gentlemen, I have heard some old farmers in this county,—men who were really *old* farmers—I have heard some of them mutter—shrug up their shoulders, and say, "What is the use of these improvements, and getting so much more from the land,"—by the by, it is not only getting so much more, but it is getting different crops,—wheat instead of weeds. I have heard some of these old farmers say, "What good will these improvements do to us? We shall only have our rents increased the more the land is made productive?" I don't know,—I hope there is not any farmer present who holds that language; but if there be, with all due respect I should say to him, that it seems to me the very height of absurdity, and, if I may be allowed to use a familiar saying, very much like cutting off one's own nose to spite one's face. To say, "Why should I improve the land when the landlord will benefit by it?" appears to me very ungracious, and also a very bad argument. I am not here to deny that every improvement in the value of the land,—every thing that science can add to the productive powers of the land, must, in the long run, be of advantage to those in whom the fee-simple of the land is vested; but the question is this,—at the same time that it is an advantage to the landlord, in whom the fee-simple of the land is vested, is it, or is it not also an advantage to the farmer, who makes his livelihood by it? Now, I ask no man to undertake any improvements—I ask no man to do so, if a sense of his own interest does not lead him to it—I ask no man if it does not pay him individually to make improvements and improve the cultivation; but when farmers argue that, because at the expiration of their tenures their rent may be increased, therefore it is not worth their while to adopt the improvements, I must take the liberty of saying that they take a very short-sighted view of their own interests, and they must also think their landlords very great fools, and equally blind to their interests; for they must go on the principle that the landlords think their land need not be made more productive, and will be content to keep their rents low in order that slovenly tenants may go on in their old way,—they must, in fact, I think, take as bad a view of their own interests as the farmers do of theirs. But again, I say, *I expect no tenant to do that which shall not amply repay him his capital, interest, and profits, during the term of his occupation of the land.* This brings me again to another question, and it is one which has been very much argued, namely, as to the degree in which it is desirable or important to hold land upon lease or without a lease. Now I speak, I know, in the presence of a Noble Friend of mine, and all who know him will say that there is nowhere a kinder or a better landlord,—or a more cordial or warmer friend to his tenants and neighbours. I know no man who lives with his neighbours more as a neighbour ought to do than my noble friend who sits on my left, the Earl of Sefton. I know, also, that it is not my noble friend's practice to let his farms on leases, and that the great majority of his tenants are tenants from year to year. Having entire confidence in the honour and integrity of their landlord, they do not believe that the fact of their not having a lease will operate disadvantageously on their interests, but I will say, as one connected with the land, that a landlord has no right to expect great and permanent improvements of the land in the hands of his tenant, unless that tenant be secured in the possession to himself of the outlay he has made, not by the personal character or personal honour of his landlord, but by a security with which no change of proprietorship can interfere, by a security granted on the terms of a lease for years. Now, Gentlemen—observe I speak of a lease for years—emphatically I say I do not speak of *a lease for lives*, for in the agricultural districts—as far as my own experience goes, with some exceptions, no doubt—whenever I have gone through a property partially and badly cultivated, with the buildings dilapidated and going to decay, I have generally found that property held in a life lease. (Hear, hear.) But I speak of a lease for a term of years, to the tenant who is determined to go hand in hand with his landlord, and spend his capital for the improvement of his farm; and I say, the greater the improvements effected, the greater ought to be the duration of the lease you give. I say that I consider it unjust to call upon the tenant to effect improvements and not to give him the security of possession for such a term as will repay him for the outlay he has made upon the land. But, gentlemen, I would go further than this, and I would say that there are some expenses of so permanent a character that the landlord ought to bear his share of them; but whilst I say this, I again repeat that it is no admissible argument against improvement, if the tenant repay himself for his improvements, to say that, at the expiration of his term, he shall leave the land in a better state than he found it; but whilst I say that this is an inadmissible position, and admit, nay, contend, that in proportion to the amount of improvement expected from the tenant ought to be the duration of the lease that is to repay him, I will say that there are some expenses, more especially with regard to the sort of land of which a great part of this county consists, which it would be idle to expect the tenant to undertake,—expenses which, as they add to the permanent value of the land, ought to be undertaken by the landlord himself,—charging such an amount of interest as will pay him annually for the outlay he has made, and at the same time allowing a reasonable profit to his tenant. Gentlemen, I am not now speaking except of that with which I am myself practically acquainted. I allude again to that which is the basis of all improvement, especially in this county—deep and thorough draining of the soil, and I repeat, what I have said on a former occasion in this room, my conviction that there is no investment in the world in which the landlord can so safely, so usefully, and so beneficially invest his capital as in the improvement of his own farm, by means of scientific draining, on the security of the land itself.

Mr **Neilson** said he had two descriptions of ploughs,—one which he used in the furrows of turnip drills, and which, by its action, heaved up the sides of the drills, and so loosened it as to admit the atmospheric air, the other plough was used in the track of a common plough, when preparing the land for wheat, and could be worked by two horses abreast. In constructing one of these ploughs, he was much indebted for some useful hints to his friend, Mr. Hendrie, of Knowsley. Mr. N. then made a statement as to the extent of land which had been brought into cultivation on his own farm by the eradication of old hedges, filling up and draining of large ditches, and enlarging the fields, by which upwards of 12 acres had been gained on a *farm* of 175 acres. He then spoke of the increased production to be effected l ploughing up of pasture lands, the sity for improved farm buildings and and the construction of liquid m tanks. He spoke practically on this s having had entire new erections mad his own farm by his landlord, and by he had found considerable saving in l and although the terms on which t provements were made were not at p determined, he did not hesitate to sa he would rather give his landlord no cent., but even 10 or 15 per cent., than it should not have been effecte

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SOUTH CHESHIRE AGRICULT SOCIETY.

The annual meeting was held at Nar on the 2nd. of October. The sh stock, though not very extensive, ex a decided improvement as to qualit that of last year. Eight bulls were for the first premium in class 4, v Mr. John Glassford, of Lostock G beating Mr. John Warburton, of San Mr. W. Palin, and five others. M Harper, of Belvidere, near Whitc exhibited as extra stock a very fi which elicited encomiums from c seurs in the good points of this im class of cattle. The premium for t yearling bull (five of which were s was won by Mr. Samuel Moss, o thorne. Of dairy cows, eighteen exhibited, and a most excellent dis this useful description of stock it affording convincing proof that th shire farmers are alive to the adv and necessity of giving every atten the improved breeds of cattle for the of the dairy. The show of calving was not particularly good; the fir second premiums were awarded t George Woolrich, of Sutton, near M wich; the prize for second best wa nally adjudged to Mr G. Cornes of W hall, but as the same animal had o a premium last year, an alteratio made in conformity with the rules, result was what we have just state pairs of stirks were exhibited, among which were several much admired and useful animals; Mr. Palin gained the award for the best pair, and Sir P. Egerton, M.P. that for the second best; those belonging to the worthy Baronet were also reared from Mr. Palin's stock. Of pigs there was a good show of a decidedly improving character; and the animals exhibited by Mr. Woolf, Mr. Woolrich, and Mr. Norman, were universally and deservedly approved of; a boar, only 20 weeks old, sent as extra stock by Lord Combermere, attracted considerable notice and admiration; it was bred from a Berkshire pig, the property of a gentleman in Nottinghamshire, and is by a boar belonging to the Duke of Newcastle. The show of horses for agricultural purposes was better than usual, and of a kind which manifests a progressive spirit of improvement in the attention paid to this class of animals by the farmers; the successful competitors were Sir J. Broughton, Bart. and Mr. Woolrich. There was also in the show field an interesting variety of implements for facilitating the operations of husbandry; among which Mr. W. Wood, of Knutsford, exhibited an admirably contrived scarifier, several improved ploughs (to one of which a premium had been awarded by the Manchester society), and an excellent double-lever churn, which has also been awarded by various agricultural associations. Mr. David Harkes, of Mere, near Knutsford, had likewise a most useful assortment of Implements, manifesting a clever application of mechanical skill to the purposes of farm management; and his newly invented churn, which obtained a premium at the recent meeting of the Royal Agricultural Society at Southampton, excited general attention and commendation. A well-constructed and most ingenious machine for manufacturing bricks and draining tiles was exhibited by Mr. Scragg, of Calveley; its operation is most simple, quick, and effective; and by its means 4500 pipe tiles, measuring 3¼ inches in the arch, and 14 inches long, may be made in a day; the machine only requiring a man and a boy to keep it in full work.

The following were the Judges :—

Judge of Dairies of Cheese—Mr. Pryme, of London.—*Judges of Stock*—Mr. Wilkinson, of Madeley; and Mr. Etches, of Broughall House.—*Inspectors of Farms*—Mr. P. Carter, of Aston Park; and Mr. Hudson of Spoonley.—*Inspector of Cottage Gardens*—Mr. Vernon, of Willington.

After dinner the following noblemen and gentlemen addressed the meeting :—

JOHN TOLLEMACHE, Esq. M.P. said, a sense of duty induced him to tell them that the premiums offered by the society for the best conducted labourers in husbandry, were far from being adequate. They gave as much as £7. for the best cow; £3 for the best pig; and only £3 for the best conducted labourer. Now many generations of pigs could earn £3. before one labourer from length of service could earn a premium. This was a point which required some modification, and he pressed it upon the committee.

MR. PALIN observed it was perfectly true that farms could not be too clean, he had seen as good farming in Cheshire as in any other part of the country, still there was no doubt that much remained to be done in the way of improvement, and as to the care with which Mr. Baker had seen the lands cleaned in other counties, he Mr. Palin, had seen wheat stubbles and turnips in Cheshire which wanted no cleaning. Cheshire farming he knew was in a bad name, but the agriculturists of this county were not so censurable as generally supposed. He would caution his neighbours against trusting too much to mere theoretical information. A great deal for instance, indeed too much, had been said and written about guano, but unless farmers were cautious in the use of it they would run the risk of burning their fingers. He had tried an acre of carrots and mangold wurzel with that popular manure, and he had as miserable a crop as need be seen, and the comparison with other similar crops was decidedly in favour of those raised with farm yard manure. A gentleman had informed him that he had spent £200 in guano, and had not received 200 pennyworth of benefit from it. Genuine guano was no doubt a good fertilizer, but a great deal of it was not worth carting, and the mortification was that you not only spent your money but lost your crop also. In dry seasons guano did not answer and it was never so completely to be depended upon as farm-yard manure. For the county of Chester, he (Mr. Palin) felt convinced that there was nothing equal to farm-yard manure for green crops, and bones for pastures.

The CHAIRMAN (the right hon. Lord Viscount Combermere) said he was sorry to observe that what he and others did in draining many years ago, was done injudiciously. He hoped now that they were more enlightened, the draining would be done more effectually. So anxious did he feel on this point, that he had proposed to Mr. Smith, of Deanston, the great draining authority, to come here to give a course of lectures; and he should be happy to have the attendance not only of his own tenantry, but also of his neighbours on those occasions. It gave him great pleasure to remark, that individually the Cheshire farmers were much improved in temper and disposition, as well as the animals they bred. They were not so obstinate and bigotted as formerly; and they were willing to abandon their old Cheshire customs, and adopt something better. So long as they stupidly followed in the footsteps of their forefathers, they excelled in nothing but cheese; indeed the Cheshire farmer used to be so good a fellow, and so fond of society, that he spent too much time in drinking ale, to be able to attend properly to the cultivation of his farm. He saw now a great change for the better in the habits of the population, and now adays you seldom see a Cheshire farm in a state unfit for society. Mr. Tollemache had made some allusions to cheese, and what he had said was most satisfactory, and convinced him that at present they need not be afraid of the importations of American cheese. The Americans could not make an article that could compete with the Cheshire, and he hoped they never would. But the proper way to defeat them, would be to make better cheese. To be sure, there were some who seemed to expect as good a price for bad cheese as for good; now these, he considered, were most unreasonable grumblers, and not likely to be satisfied. He must confess he was so far bigotted to old customs, that he wished the farmers would adopt the old system of making cheese. The screw was a good thing, but it was often used for the purpose of saving wages; this was a false notion of economy, as although they might save the wages of one dairy maid, they lost from 5s. to 10s. per cwt. on the cheese. Much of the cheese made by mechanical power, with less appliance of the dairy maid's hand, was very inferior; and, as he was told, cut black and bad in the centre; now if the whey was all properly extracted, the cheese would be the same colour throughout. He should like to see an improvement not only in this particular, but also in another. It was true that this was not a corn county, but what arable land w
should be well cultivated; and he thou
in Cheshire they neither ploughed deep
nor put in seed enough. With respect
he did not think there was any animal b
the purposes of the dairy than the o
horned Cheshire cow. He had no fanc
various mongrel breeds with so many
there were some short-horns good milk
they were best adapted for fattening.
fashioned long-horned Cheshire was
profitable kind; she was, in fact, the co
country; and he recommended all his t
get that sort back into their farm-yar
the breed became extinct.

Mr. P. CARTER, one of the inspect
that he and his colleague had found th
of the candidates in an improving c
and their dairies highly creditable. H
that Cheshire was so much behind oth
ties in its agriculture as had been state
sons passing judgment on it, just loo
part by the road side, and forgetting th
not an arable county, that only one-fo
farm was allowed to be put in tillage,
the rest must be kept in grass land for
cows, they saw but little cropping g
and then they condemned Cheshire
He was sure if the matter was proper
at, they would not be so much depre
they were. Mr. Carter then referre
restrictions as to cropping which exis
county, and gave it as his opinion that
be better to allow the rotation system o
now permitted to the extent of one fou
practised over *all* parts of the farm, ra
confine it to *one particular portion*. L
Farm, which deserved every commend
an instance of this; the course of tilla
was wheat, oats, and potatoes; he con
would be a great improvement if th
come round to clover. He was fully c
that some relaxation in the present re
prevalent in Cheshire, would be of gre
to the tenant, and no injury to the lan

Mr. PALIN wished to ask Mr Prym
Cheshire cheese would be better fo
longer. Thirty years ago there wa
talk about the falling off in the quality
and then it was ascribed to the hreaki
the old pastures. Formerly farmers k
cheese over the summer, now they sca
heard of such a thing. The reason w
well understood.

Mr. PRYME replied, that no doubt c
that if good cheese could be kept un
ripe, it would be worth more money,
worth the attention of the dealers. B
was badly made, time would make no
ment in it. It was not only req

ould possess quality, but also that it
: well made and well cured, the same
ther food. Unless those points were
to, it would not command a market,
e a good price.

LIN.—Then the principal cause of the
f quality in Cheshire cheese is bring-
narket too soon.

YME.—Not the principal cause; that
cause in some instances.

IVAS, (from Messrs. Dickson, of Ches-
much had been done to improve the
tock—little or nothing they found had
e for the vegetable world. Messrs.
ad come to the determination of offer-
e of a first-rate plough, or money to
to the practical farmer, who at the
neeting should give the best report of
nts tried upon imported wheat, com-
he local variety, grass, turnips, &c.
oped some of the gentlemen connec-
the society would continue the pre-
following years, to be applied as they
roper.

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GHSHIRE AND FLINTSHIRE

AGRICULTURAL SOCIETY.

ual meeting was held on the 4th
t Wrexham, and was attended by
the influential landowners and
rom the various districts compri-
n the limits of the society. The
cattle took place at the Birming-
l, and was decidedly superior to
y former year.

ndor, of Bodfarry, won the first
for bulls; a yearling Galloway
roperty of Lord Bagot, was highly
led as admirably adapted for the
districts; an upland bull, from
of Mr Maysmor of Rhydycilgwyn,
merit; there was a good show of
mong which the Cannocks and
of Lord Bagot, attracted particular
being of a breed well suited to
ct. The classes of Heifers were
d, several capital beasts of this
n being in the yard, those belong-
r. Bennion, of Wrexham, were
praised, and the short horned
as extra stock by Mr. Harris, of Laurel Grove, elicited the warmest commendations. A Welsh cow, three years old, shewn by Mr. Turnor, of Pool Park, as extra stock, was a perfect creature of her kind, and we should hope that her introduction to the show-yard will stimulate his neighbours to get a supply of animals of this class, (the most profitable and best suited to the locality which they can have on their farms,) for the exhibition of native cattle was poor indeed. Some pigs of a good sort were shown—Mr. Townshend Mainwaring's sow and a young Berkshire boar from Lord Bagot were much noticed. An Alderney bull was exhibited by Sir Watkin W. Wynn, and four head of Indian cattle, in beautiful condition, by Sir Robert Cunliffe, Bart. of Acton Park. The diminutive size and singular form of the latter elicited many curious and inquiring comments. The show of horses was indifferent. Some useful implements were exhibited, and a premium was given to Mr. Cartwright of Shrewsbury, for an ingenious straw-cutting machine, and a well contrived barley cleaner. We noticed a most useful harvest cart, belonging to Lord Bagot, it only weighs 7 cwt. and a half, and is capable of carrying an immense load, requiring only one horse to draw it. It is the invention of Mr. Hannam, and if generally adopted in the hilly parts of Wales, would be the means of an immense saving of time and labour. Messrs. Dickson, of Chester, attended with their usual variety of Seeds, Roots, &c., and we were glad to observe an increased anxiety to obtain information upon subjects of so much importance to practical farmers.

The ploughing matches on this occasion were well contested; and we were happy learn, that in this very important department of agricultural labour, a marked improvement is visible throughout the district.

Mr. Gorst, of Sealand, near Chester, Mr. Blurton, of Dunstall, Staffordshire, and Mr. Welch, of Berth, officiated as Judges of the stock.—Mr. Griffith, of Argoed, and Mr. Williams of Celyn, were the Judges of Ploughing.

Mr. Kerfoot, of Veanol Bach, was the Inspector of Farms.

At the meeting of the Committee, it was judiciously resolved to offer additional premiums for the best milch cow, and the best dairy of Cheese. A prize of £20 is also announced for the best essay, in the Welsh language, on the Science and Practice of Agriculture. The funds, we were glad to hear, are in a flourishing state, and twenty new members were enrolled as subscribers to the society. We congratulate the association on its increasing efficiency, and the liberal spirit with which it seems determined to promote the progress of agricultural improvement.

We are tempted to break our rule against the notice of after-dinner speeches, for the purpose of giving a more extended publicity to the following remarks which fell from Thomas Turnor, Esq., the highly respected agent of Sir W. W. Wynn, Bart. It is not upon this occasion merely that Mr. Turnor has drawn upon his plentiful store of agricultural information for the benefit of the farmers of North Wales, he is ever ready and willing to communicate, and has over and over again preached in the dinner-room what he practices out of it; he not only points the way for landlords and tenants but the road being perfectly practicable, he travels himself on the track he points out:—

Mr. THOMAS TURNOR spoke at some length and with considerable effect on many practical points connected with agriculture. He observed, in carrying on the process of draining, he had found it far more economical to fetch draining tiles a distance of 14 miles from Flintshire than to use stones; his plan was to sheathe the bottom of the drains with waste from the flag quarries, to make the drains no wider than necessary, and to cover the tiles with heath, the precise expense he was not yet quite prepared to state. And here he would caution his neighbours not to rush blindly into the *Scotch system,* which was now all the rage; that system had many merits, and the Deans
was admirably adapted for gentle slope
was not so well calculated for the land i
where there was more water. It wa
mistake to make all drains of the same
width and breadth, as such drains shoul
be constructed with reference to the
cation; and as it was always desirable t
mise the application of capital to land,
be as absurd to drain deep where the w
shallow as to lay down a shallow dra
the water was deep. He would here
that after the many perils through whi
culture had lately passed, very few far
it in their power to undertake the dr
their own farms. It could not be expe
so expensive a work would be under
tenants from year to year unless they
great confidence in their landlords. I
of such confidence, he was proud to
exist among the tenantry of many
families; confidence might be given b
ment, but it was far better when so sa
a state of things existed that the lan
occupier had an implicit reliance on ea
honour. But as it was unfortunately
that very few farmers had sufficient
capital to enable them to drain the fa
held, it would be far better till times n
this important improvement should b
on by mutual assistance; the landl
better do it, and charge a reasonable pe
on the outlay. With respect to stoc
been the fashion of agricultural societi
an almost exclusive attention to it; n
man who had a good beast or a good s
the reward in his own hands of havin
one; but it was very different with
cultivation, and as that was a matter of
greater importance he thought it would
if more encouragement were given
farming. The great defect in farming i
and indeed, almost every where else, w
cessive and too frequent growth of wh
and farmers would find an advantage
ducing green crops to a greater extent, e
as the land and climate of Wales
adapted to the cultivation of turni
chance of a good crop was in proport
infrequency, and it had been found in Sh
Merionethshire, and Oxfordshire, that
of a second green crop had been to d
corn crops, and he believed it would u
be found that the assistance given to
during the eating off two green crops
to double the produce of the grain cro
had heard from the secretary, that t
had resolved to offer a premium fo
dairy of cheese, there was a good deal
subject yet to be learned, as some of h

n enabled to sell their cheese at 70s. per
ile others could only attain 45s. Whe-
e application of manure and of what
ures or benefits the grass lands, for the
of feeding dairy stock, was an impor-
ject for inquiry, for as yet no parts of
itry, generally speaking, had been left
ely to nature as the cow-pastures of
l, and he thought it an interesting sub-
investigation, whether the introduction
xed stock alternately with milch cat-
ht not have the effect of improving
s, and clearing them of some of those
s grasses which occasionally sprang up
o animals but cows were depastured.
spect to sheep, attempts had been suc-
made by Lord Bagot, to introduce
hardy breeds into Wales, and if they
nerally adopted a vast improvement
e effected in that description of stock,
result would be that in the fleece for
und of wool they would have 4lbs. and
ass instead of weighing 10lbs. per qr.
erage from 16 to 20lbs. The cheviots
mocks he had no doubt would do for
but if not could they not cross them
native sheep, and then he was sure they
ave a breed well adapted to the country,
uble the weight both of mutton and
nd he felt confident they would readily
acclimated on the dry mountains, as
signified less than moisture to sheep.
ference to guano, he might observe that
used it for turnips, and that the benefit
roportion to the guano employed; and
also found that it accelerated the ripe-
corn, as his barley after guano was a
rlier than his other crops. And here
d remark that one great fault in Welsh
, was late sowing; he had himself made
e mistake this year in sowing a few
late, one week's earlier sowing would
de all the difference between a bad crop
od one, and in a climate like that of
Wales, this would very frequently be
be the case. He would earnestly advise
get their seed in early. As to cattle,
of that day had in many respects been
one; he had never seen more beautiful
ns of short horns than had been exhi-
Mr. Harris. But he hoped his neigh-
ould not be too rash in attempting to
hem to high situations; it was hardly
pass by the native breed—improve that
l then try others. It was much to be
d that the class of stock in which the
d most failed, was that of native cattle;
trying to improve it, they must be care-
to cross it with totally different and
blood, but with kindred breeds. For this purpose he thought the Galloways introduced by Lord Bagot would answer well, they were of a hardy race, accustomed to cold climate and hard food; and with crosses of the Castlemartin, Anglesey, and Galloway cattle, he had no doubt but that they would ultimately rear an excellent and very useful breed, which would supersede the narrow-hipped, heavy horned, and comparatively profitless Welsh cows. With reference to seeding land, he would strongly advise them not to mix all seeds, where they had room for sowing them separately. Every plant had a peculiar pabulum of its own, necessary to its existence. Thus Sir H. Davy had demonstrated to the late Earl of Leicester, that the pabulum of red clover was gypsum. The Earl (then Mr. Coke) tried gypsum, and abundant crops were the result; the experiment proving that the particular quality, of which the soil is robbed by the growth of the grass, must be supplied artificially. Mr Turnor condemned short rotations, or courses of cropping, as injudicious and injurious, and cited some of his own practice in confirmation of his opinions.

AN ESSAY ON FAT AND MUSCLE.

BY MR. W. F. KARKEEK, V. S. TRURO.

The object of this essay is to endeavour to explain "the causes that appear to determine the production of fat and muscle respectively, according to the present state of our knowledge of animal physiology." Formerly the study of the uses and functions of the different organs, and of their mutual connexion in the animal body, was the chief object of physiological research; but, although they yielded the most valuable results in relation to the recognition of dissimilar forms and conditions to be found in healthy and diseased structures, they afforded no conclusions calculated to give us a more extensive insight into "the essence of the vital processes." The recent alliance of chemistry with physiology has furnished most valuable data both in this respect and as regards the nutritiveness of particular vegetables in the feeding of our domesticated animals. The most important discoveries in this branch of science are those of Professor Liebig, he being admitted by the unanimous voice of European chemists to be the first living authority on Organic Chemistry. Professor Playfair was the first English chemist who attempted to apply those discoveries to the practical purposes of the farmer—holding up the torch of science, as it were, to the agriculturists, and teaching them the advantages to be derived from the union of practice with science. It will be seen, in the course of this essay, that we have adopted many of the physiological views of Professor Liebig; and, if we have succeeded in adding but one useful fact to the mass of knowledge already acquired, and which may be advantageously put into practice in the ordinary operations of a farm, our object will be sufficiently realised.

Your attention will first be directed to some of the phenomena connected with *nutrition* and *growth.* When we consider that the food of vegetables and animals is either altogether different in their substance, or passes before being assimilated into a new form, we must admit that the nutrition and growth of both depend on chemical agencies, although these operate under peculiar conditions, and are influenced by the unknown force which is termed the *vis vitæ*, or *vitality*, so as to produce results that cannot be imitated by the chemist. The food of vegetables is derived from the crude and simple materials which they absorb from the *air*, the *earth*, and the *waters*. These, after being converted by the powers of vegetable assimilation into the substance of the plant, acquire the characteristic properties of organized products. Hence, plants can grow at the expense of the elements around, where no living substance ever previously existed; while animals, on the contrary, can only exist upon matters previously organised either by plants or other animals. In their well-marked forms, no two things can be conceived to offer a stronger contrast than these great divisions of organized beings; yet the naturalist cannot determine, in the animated chain, where the one ends or the other begins; nor can the chemist detect, by his analyses, any greater differences in their constituent parts.

Before, however, we can comprehend the manner in which these changes are effected in the living organism, we must make ourselves acquainted with some of the laws, vital and chemical, that regulate the metamorphoses of these materials, and the interchange of atoms occurring between the blood and the structures in the process of nutrition. Accordingly, we will first direct your attention to the process by which the aliment is received into the bodies of animals, and prepared to form a part of their fabric. When the food has entered the stomach, the gastric juice is poured out, and the whole is coverted into a pulpy mass termed *chyme*. The process by which this step is produced in the assimilation of the food constitutes what is commonly called *digestion*. The next step occurs in the intestinal canal, where the chyme is united with the biliary and pancreatic secretions, and becomes converted into *chyle*. Brande found no essential difference in the chyle of graminivorous and carnivorous animals. Dr. Marcet imagines that the former is less abundant in albumen than the latter; and Liebig informs us that all the compounds of proteine, absorbed during the passage of the through the intestines, take the form o men. The chyle is absorbed from th surface of the intestines by a set of termed *lacteals*, which commence by ve nute orifices in incalculable numbers, an successively into larger and larger vessel they form trunks of considerable size, empty their contents into a *receptacle* f purpose, forming the entrance to the *duct.* In this receptacle, other absorbent termed *lymphatics* also terminate, and their contents. The fluid which they co of nearly the same character as that bro the lacteals. Almost every part of the in continual decay, so that we may jus death and decay are constantly going on i living body, and are essential to the act its functions—a quantity of organised being continually removed, and replaced which is newly formed. Of this, a po doubtless unfit to be retained within th and is cast out by the various processes *cretion;* but it appears that another pc it may again be made use of, and is, taken up by the lymphatics, and brough central receptacle to be mixed with th absorbed chyle: so that an animal may in a certain sense, to live upon its ow The *chyle* and *lymph* thus mixed togeth into the thoracic duct, by which they a veyed into a large vein—the *jugular*— sent together by a direct and short co the lungs.

The changes which result from the of the blood through the lungs form a v portant part of the process of nutritio blood, the newly formed as well as tha has been returned by the circulation a pairing and renovating the tissues, here in contact with the atmospheric air, v principally composed of two gases, oxy nitrogen, in the proportion of 21 parts former and 79 of the latter, besides the vapour with which the atmosphere is more or less charged. A change imm takes place, from the dark purple wh blood has when it is brought to the lun bright vermilion colour. When the produced this effect it is found that a proportion of oxygen which it had co has disappeared, and the place of the o almost wholly supplied by an addition bonic acid gas, together with a qua watery vapour. With regard to the nit the atmosphere Liebig says that it is ap no use in the animal economy except the oxygen; while other chemists, Mu instance, affirm that nitrogen is both nd exhaled by the blood in respiration.

The question next arises, what becomes of
oxygen that disappears in respiration, and
it is the origin of the carbonic acid gas?
blood consists of the same elements as the
which the animal consumes, containing, as
ave seen, a very large proportion of carbon
hydrogen: and as carbonic acid gas consists
ygen and carbon, it is evidently the result
e combination of the oxygen with the car-
f the food. According to Boussingault,
rse consumes in this manner in twenty-
ours 97⅛ oz. of carbon, and a milch cow
z.; and the former requires in order to
rt the carbon into carbonic acid 13 lbs.
. of oxygen, and the milch cow 11 lbs.
z. in the same time.

whatever way carbon may combine with
n, the act of combination cannot take
without the disengagement of heat. There
in the living body no other known source
t but the chemical action between the
nts of the food and the oxygen of the
phere, and it signifies nothing what inter-
te changes the food undergoes in becom-
similated to organised tissues, or in its
e through the liver in the formation of
The last change is uniformly the com-
n of the carbon and hydrogen, and the
ction of carbonic acid, watery vapour, and
l heat. No part of the oxygen taken into
stem is given out again in any other form
hat of a compound of carbon and hydro-
and as these substances are supplied in
od, it is clear that the amount of nourish-
required for any animal will be propor-
e to the quantity of oxygen taken into the
n.—*(To be continued.)*

Horticulture, &c.

ARS.—The Glout Morceau is the most
r for a south wall, if you wish fine
about Christmas; if you prefer a later
y plant the Beurré Rance.

SES.—*Prairie.*—This is a new group of
ing roses, which promises to be of
interest. Mr. Samuel Feast, of Bal-
e, U. S., has had the pleasure of
g the above-named varieties, from the
of the single Michigan Rose, Rosa
lia; they are all of most robust and
ous habits, making shoots in one season
than twelve feet in length. No. 3 is
ost perfect and beautiful of the whole,
clusters of flowers containing from
twelve to twenty each; at first they are finely cupped; in a day or two they become imbricated, like those of the Duke of Devonshire. It seems to resist the hottest sunshine, and the flowers remain on the plant for a longer period than usual with any other rose: in wet weather, however, they are not at all bright in colour, as was the case with some that bloomed the past summer; this has been named also Beauty of the Prairies. Rivers is that name given to it by Mr. Feast. No. 2 only occasionally gives autumnal flowers. No. 1, owing to most of the imported plants dying, is more scarce than the other varieties. All these Roses are perfectly hardy; they will form fine Pillars and pendulous Standards.—*Catalogue of Selected Roses, by T. Rivers.*

Six good Roses for Pots are Bougère, Fabvier, Napoleon, Devoniensis, Eliza Sauvage, Bernard.

NOTICES OF NEW PLANTS WHICH ARE EITHER USEFUL OR ORNAMENTAL.—EPACRIS AUTUMNALIS. Autumnal Epacris *(Greenhouse Shrub.)* Epacridaceæ. Pentandria Monogynia.—This plant is inferior in interest to few of the charming species and varieties of Epacris with which we are acquainted. Its habit is that of a vigorous-growing shrub, combining with strength of stem all the elegance peculiar to the tribe, and producing richly coloured flowers about an inch long. Unlike most of its kindred, it commences blooming towards the end of October or beginning of November, and continues to flower through the winter till April. This feature, which is not the least interesting or useful, has suggested the specific name. In the management of this and all the stronger and more rapid-growing Epacrises there is one point to which we desire to direct attention. It is the common practice to employ nothing but moor-soil and sand in potting, and it is to this, perhaps, more than to any other individual error, that the lack of success is attributable. If a portion of loam and well-decomposed leaves be incorporated with the heath-soil and sand, much more luxuriant shoots will be formed, and the quantity of flowers increased; for the soil being of a more open and porous nature, will prevent the lodgment of stagnant water around the delicate roots, which so often, by destroying these organs, perils the very existence of the plant. Flowering in the winter season, at a time when solar light is at its minimum, it becomes more especially requisite to place them in an open part, where other shrubs may not shade them; if this be neglected, the flowers will be inferior in richness and intensity of colour. A liberal supply of water and a slight degree of shade will be needed whilst they are making their growth; and a perfect circulation of air must be maintained at all times.—*Paxton's Magazine of Botany.*

MONSTROUS GRAPES.—In a vinery at Dorfold Hall, Cheshire, there is a bunch in which there are three monstrous berries of a Black Hamburgh Grape; the largest of them measures in circumference 5 inches, the second 4¾ inches, and the third 4½ in. The bunch itself probably weighs about 3lbs.; there are several berries nearly as large in other bunches on the same Vine; they have very much the appearance of a Tomato.

Reviews, &c.

Chemistry made easy, for the use of Agriculturists. By the Rev. J. Topham. London, Whittaker and Co.

THERE is but little in the work before us—indeed, little is attempted; but the little there is, is pleasantly given.

The following illustrations of certain results of chemical agencies, which are for the most part taken from matters of every-day occurrence, will exhibit the general character of the book, which from its size and cost may well be found in the pocket of every enquiring farmer:—

"If into a glassful of ale, which has become *tart, a few grains of* carbonate of soda are thrown, the liquor will be rendered mild and brisk.
acid which occasioned the sour taste, (acet
having a stronger affinity for soda than carbo
acid has, herein combines with the soda,
liberates the other, in the form of carbonic a
gas; and it is to the presence of this gas t
cider, perry, and sparkling wines, owe th
effervescing qualities.

"In washing the hands in ordinary spri
water, known as *hard*, the soap used in
operation will frequently have been found
have been almost useless, and the liquid to ha
assumed a curdled appearance. This is oc
sioned from the decomposition of the so
which is formed of an alkali and tallow, by
acid of the carbonate of lime, (which caused
hardness,) uniting with the alkali of the so
and releasing the tallow, which shewed itself,
before stated, upon the surface of the water.

"If into a dry tumber-glass, a few grains
oxalate of potass are placed, and water, from
similar source, poured upon it, the water w
become turbid, owing to the combination of
acid with the lime, forming an insoluble co
pound, (oxalate of lime.)

"The presence of common salt may be
tected by a few drops of nitrate of silver
solution; and that of iron by a small quant
of an infusion of nut galls. The oxalate
potass, nitrate of silver, and nut galls, th
applied, are termed tests.

"Certain springs, (as at Matlock and Knar
borough,) called petrefying waters, contain ca
bonate of lime, in solution, in large quantiti
which is partially decomposed and deposited,
coming in contact with the atmosphere, so th
substances placed therein, in a few weeks b
come coated with that material.

"A cause of softness in rain-water is du
first to its not containing such salts, and con
quently not curdling soap; and also to its hol
ing in solution a small portion of carbonate
ammonia. It is these earthy salts, in solutio
which caused what is termed "furr," in te
kettles and other culinary utensils; the ac
with which they are combined being driven o
by the heat of the fire, the lime is deposited
the sides and bottoms of the vessels.

"In cutting an apple with a polished ste
knife, the part of the blade which has come in
contact with the fruit, will have been observ
to have become black, as if stained with in
This stain is occasioned by the acid of th
apple, (malic,) combining with the iron, a
freeing from it the carbon with which it w
united, in the formation of the material.—Ste

"On a portion of a recently-hung gate, co
structed of oak timber, we may frequently ha
observed a dark blue-coloured stain, which w
caused by an union of the gallic acid of the

particles of iron, abraded from the sides e saw, whilst cutting the wood, and is, in , genuine ink; this fluid being a compound hese two substances, with the addition of a ll quantity of gum arabic, to give it a body, it may be retained by the pen, when used writing.

"What are termed chalybeate springs, are so ned from holding iron in solution; and it is less true than curious, that the brown sedi- nt which may frequently be observed in pools d shallow water-courses, is occasioned by the st-off skins of minute animalculæ, (infusoria,) e principal constituent of which is iron. These eatures are invisible to the naked eye, but are certained, by the microscope, to exist by hun- reds in every drop of pool or river water.

"Indeed such exuviæ are, in some districts, ccumulated in masses, as to form immense beds f ore; and this invaluable metal is extracted r the use and convenience of mankind, as it ere, from the sloughings and offscourings of sects. Thus we perceive how, from apparently significant means, the most gigantic results re planned and perfected by an all-wise and eneficent Creator; and whilst we behold, we ould adore.

"Should a ploughshare, or any other iron strument, be suffered to remain a few nights posed to the action of the moist atmosphere, will acquire a coating of a brown colour, ed rust. This is caused by the oxygen of air uniting with the iron, and forming an de. It is owing to iron, in this condition of dation, that a brown or yellow colour is com- nicated to clay, sand, &c.

"Dissolve any given quantity of marl, in uted muriatic acid, pour off the fluid from e undissolved matter, and to it add a small rtion of common potass, dissolved in water; me, which makes it valuable, will be thrown own or *precipitated*, and the proportion present n be thus ascertained. The muriatic acid aving a greater affinity for potass than for lime, deserts the latter, and combines with the ormer.

"In stables, wherein a powerful smell of artshorn, (ammonia,) is perceptible; if an unce of muriatic acid, (on a plate,) be placed herein, dense white fumes will be seen in its eighbourhood, which are devoid of all smell. This is muriate of ammonia. The acid having strong affinity for this alkali, has attracted nd retained it. And I here venture to suggest, hat if in stables, the floors were occasionally prinkled with water, containing muriatic acid, the proportion of two ounces of the latter, a gallon of the former, the smell *would be* considerably destroyed, and the injurious influence of the ammonia, upon the horses, be greatly weakened.

"If an ounce of oil of vitriol, be poured into three separate wine glasses, and in the first there is inserted a piece of straw; in the second is placed a small portion of cork; and into the third, is dropped a lump of loaf-sugar; the three substances will become black; the straw appearing as if it had been charred by a fire.

"The oil of vitriol, (sulph. acid) has, in these three instances, united with the constituents of these several substances, except their carbon, which imparts the well-known black colour of charcoal to the parts remaining. In the instance of the sugar, which is composed of carbon and of water, it has merely abstracted the elements of the water, (hydrogen and oxygen,) and left the carbon untouched.

"If a small quantity of oak sawdust, well pressed into the bowl of a large tobacco-pipe, (the mouth of which is closely coated over with pipe-clay,) be submitted to the action of a clear fire, a species of vinegar, (pyroligneous acid,) will be distilled from the end of the tube, and charcoal be found remaining after the operation is concluded; which charcoal, when burnt in the open air, will leave a small residue of white ashes, containing potass and a very minute quantity of insoluble matter, consisting principally of lime.

"These latter mineral substances not being destructible by fire, are styled *inorganic* constituents of plants, whilst those which are resolvable into elementary bodies, and fly off to form new combinations, (as carbonic acid, &c.,) are termed *organic* substances. Thus by ascertaining what are the elementary principles of which vegetable substances are constituted, we are enabled to form a tolerably correct opinion of the species of manure, that will best promote their health and vigorous growth.

"The production of water may be observed, during the burning of a gas-lamp, in a coffee-room, &c.; where a funnel-shaped chimney, is frequently to be seen, suspended over the flame, attached to a tube, having a glass globe at its extremity, generally containing a fluid, generated during the combustion of the hydrogen gas, in union with the oxygen of the atmospheric air,—which is water.

"The chief constituents of corn,—fibrine and starch, may be obtained in the following manner. Enclose a portion of the flour of wheat, made into a paste, with *cold* water, in a small muslin bag, which squeeze in a gentle manner, in a basin of cold water, so long as any white particles are discharged from the bag. The residue in the bag is fibrine, and the powder in the basin is starch.

"By rubbing an unripe apple upon a grater, and washing the portion which is rasped off, in cold water, starch will also be collected; which starch, had the apple been suffered to remain until ripe, would have been converted into sugar, forming the sweet juice of the fruit.

"Potatoes also contain from 10 to 12 per cent of starch, which may be separated by the foregoing process. Arrow root is starch obtained from a species of reed; sago, from the pith of the palm; and tapioca from a plant which both yields this bland food, and a virulent poison."

◆

The History, Structure, Economy, and Diseases of the Sheep. By W. C. Spooner, V.S. London, Cradock and Co.

THIS is a very compendious work, consisting in some considerable degree, as far as regards the *History* of the sheep, of compilations from various authors, who have at different periods given the result of their observations to the public.

In the history of the several mountain breeds a long and interesting account is given of "the Cheviot sheep," certainly the most valuable of all the native breeds for high and exposed situations. Whilst the Cheviot is finding its way rapidly through all the northern counties of England, and successfully supplanting many inferior breeds, its progress into Wales, where so advantageous a cross may be made with the small hill sheep of Caernarvonshire, &c., is slow and unsatisfactory. We can speak positively of the advantages to be derived from a judicious cross of these breeds; for in a small flock of selected ewes, of the Cheviot and Caernarvonshire breeds, to which a Cheviot ram was turned in November, 1842, the lambs were as large and strong from the Welsh ewes as from the Cheviots and ready for the market to the full as soon: circumstances, however, prevented our having the opportunity of applying the only safe test of their comparative value, viz., the scales.

The following is Mr. Spooner's account of this valuable animal:—

"The CHEVIOT SHEEP is a valuable breed, *which has not only* maintained its way, but has
greatly extended itself. It is a nativ
name implies, of the Chevoit Mountai
extend from Northumberland into
Though in many places bordering on th
localities of the black-faced breed, an
lofty in situation, yet the pasturage is a
different, abounding with fern and wi
as well as grasses, and is locally den
trap. These mountains reach to 2
above the level of the sea, and are thus
to the severe effects of the weather, an
covered with snow long after it has dis
from the cultivated plains below. T
has greatly extended itself through
mountains of Scotland, and in many i
supplanted the black-faced breed; but th
though in many cases advantageous,
some instances been otherwise, the latt
somewhat hardier, and more capable of
ing on heathy pasturage. They are, ho
hardy race, well suited for their native
bearing with comparative impunity th
of winter, and thriving well on po
Though less hardy than the black-fac
of Scotland, they are more profitable as
their feeding, making more flesh on
quantity of food, and making it quicker
have white faces and legs, open count
lively eyes, without horns; the ears
and somewhat singular, and there is mu
between the ears and eyes; the carcass
the back straight; the shoulders rathe
the ribs circular; and the quarters goo
legs are small in the bone and cove
wool, as well as all the body, with the e
of the face. The Cheviot wether is fi
butcher at three years old, and avera
twelve to eighteen pounds per quar
mutton being of a good quality, though
to the South-down, and of less flavour
Black-faced. This breed has been c
and improved with much judgment, wh
capable of, being under proper care,
siderable difference is perceived both in
and qualifications of those sheep kept at
of the mountains and allowed artificial f
those located towards the mountains'
The Cheviot, though a mountain breed,
and docile, and easily managed. The
fine, closely covers the body, assisting
preserving it from the effects of wet a
the fleece averaging about three and
pounds. Formerly the wool was ext
employed for making cloths, but havi
place to the finer Saxony wools, it has
price, and been confined to combing p
It has thus become altogether a second
sideration, and though increased in qua
is less fine than it formerly was, thoug
the herbage is short and sweet it is mu

se and heathy pastures. This breed
d itself into Wales and the West of
d may justly be considered as the
in breed existing in this country,
y of introduction in numerous dis-
ccupied by inferior animals.

od of the Cheviot Sheep consists
the greater part of the year of the
their native hills, hay being only
en the ground is covered with snow
ith frost. Occasionally turnips are
t it is rarely that the farm will admit
ction. The breeding farms are
st part in lofty situations, and the
disposed of to the farmers in lower
ltivated places, in order to be fatted,
nes the sheep pass into the hands of
ziers before this is effected. The
etimes sells them the first, but more
n the second year, either as hoggets
s, and the wethers are usually fatted
year after the second shearing, whilst
generally kept till they have borne
hree years, by which time they are
ld. The period of lambing is neces
in order that there should be a good
od; it therefore does not commence
he ram having been admitted, at the
to fifty ewes, the latter part of No-
uring the lambing season greater
paid, and the best food supplied.
ins are frequently produced, it is
the number of lambs reared equals
of ewes."

r Low, from whose work our
nowledges to have derived much
in reference to the breeds of
heep, carries his account of the
nt of the flock further and says:—
ime of shearing is from the middle
he beginning of July. The precise
noted by the wool being fully grown,
ing readily from the skin when pulled.
are first to be washed, which is done
ding in a pool and washing each sheep
or more generally, when the flock is
ausing them to swim two or three
gh the water to the opposite bank.
washed they are kept as much as
ground where they can be prevented
ng on banks, or otherwise soiling
In two days, if their be no rain,
e shorn, but it is better to wait seven
ys, in which case the unctuous secre-
protects the wool, has again been
s soon as each sheep is shorn, it is
rked with a stamp dipped in boiling
ed with pitch. The mark is made on different parts of the body, as the near-shoulder, the far-shoulder, the near-haunch, the far-haunch, so that the different kinds and ages of the sheep may be known at a glance.

"'Soon after shearing, the lambs are weaned, which is simply effected by a short separation of them from the dams. The lambs are now, in the language of farmers, hoggets or hogs, under the respective denominations of tup-hogs, wether-hogs, and ewe hogs. The tup-hogs, intended for use upon the farm or sale, and such of the ewe-hogs as are designed for receiving the male in the following year, are retained. The remainder of the ewe-hogs, and all the wether-hogs, are either now disposed of, or kept throughout the winter and sold in the following year, either, as has been observed, previously to the period of shearing, when they are still hogs, or after having lost their fleece, when they are dinmonts and gimmers. Sometimes they are kept until they have yielded a second fleece. All the old ewes which have borne the required number of lambs are disposed of before winter, and not only such ewes as are old, but such as are of bad form, or which it is wished from any cause to get rid of. The hogs which are retained are treated in the same manner as the breeding-ewes, except that it is common to put them on some grassy and sheltered part of the farm, where they can be best pastured. They receive hay in falls of snow, and, if possible, turnips are supplied to them during the whole winter, which may be done at the rate of a cart-load per day for every seven or eight scores.'"

Shelter during winter is an item, in the successful management of these sheep, of the highest importance, where their breeding ground is upon the mountain side, and upon which subject we cannot do better than refer our readers to a series of very valuable papers in the *Quarterly Journal of Agriculture*, by Mr. Baim. The well-known cross of this breed with the pure Leicester is spoken of by Mr. Spooner as it deserves; indeed, the Cheviot appears to be desirable as a cross wherever a certain constitutional hardiness is required, without depreciation in any important degree of either fleece or carcass; and whilst improving the smaller breeds of mountain sheep, by giving them greater size, it affords to the large low country races an improved constitutional strength without diminishing their weights. In reference to this part of the subject, Mr.

S., in another part of his volume, observes,

"The Cheviot sheep possess many valuable qualities; decidedly inferior to the South Downs in their fattening powers and their early maturity, they are superior in these points to all other mountain sheep, and, in hardihood, even to the South Down, and are thus the best adapted to their native hills, and all other pastures of a similar character. When carried, however, to the extreme north and the islands of Zetland and Orkney, it is said they are not sufficiently hardy for these extra-rigorous places, although it is probable, with a little increase of care, they might be rendered so, and they would then be far more profitable than the ungainly forms of the native breed."

We shall have pleasure in again recurring to Mr. Spooner's volume.

◆

The Economy of Waste Manures, a Treatise on the nature and use of neglected Fertilisers; by John Hannam. London, Longman, Brown, Green, and Longmans.

Mr. Hannam, whose fame stands deservedly high as a man of neat experiments, which are not less honestly than pleasingly recorded for our benefit, and who would in any profession or pursuit be deemed with truth an able and accomplished writer, presents us, in the little volume before us, with abundant matter for serious consideration. Science having already opened up for the farmer new paths which lead to profit, and having pointed out to him how much of his own destiny is in his own hands, our author very truly and naturally observes—

"That this is the case, is capable of demonstration. The time was when the process of vegetation was looked upon as perfectly inexplicable; when every plant was regarded as an effort of creative power, moulded and sustained by the absolute dictum of the Almighty; and when the application of manure was rather a *customary propitiatory offering* to the soil, than a direct agent in the production of the vegetable structure; *that time no longer is.* We now know, that in the vegetable as in the animal kingdom, life and health are not directly dependent on the omnipotent fiat, but more immediately on the operation of certain *principles*, originally ordained by that fiat; and that the *vigour or weakness* of the structure depends on
the fulfilment, or not fulfilment, of certain con
ditions in accordance with these principles.

"Thus, we have learnt that the plant eat
and drinks the food stored in the soil, an
breathes the atmosphere through the organs o
its leaves, assimilating, during the operation
such matters as are necessary for the futu
development of its structure—a process simil
to that of animal nutrition; also that, as th
animal body can not be sustained with *one d*
scription of food, so the vegetable, in order th
it may perfect its parts, requires a variety
matters from which to extract the elements
its organization; and that, as *different ani*
require different *sorts* of food, so various d
scriptions of vegetables require various sorts
nutritious matter.

"From which we deduce the two follow
principles, with their practical applications
"*First.—That all plants exhaust the soil m*
or less; hence, *no land can produce crops w*
out deterioration.

"*Second.*—That a soil in order to be *thorough*
fertile, should be in such *a chemical condition*
to feed every want of the plant; (i. e., it sho
contain *every* matter required as food by *e*
plant,) and that it should be in such a mech
cal condition as renders it adapted to supp
the roots of those plants, and to act as a medi
through which they may obtain the element
nutrition; (i. e., it should neither be too
nor too dry, too rough nor too fine, too stiff
too light, nor in any other state that will i
fere with the process of nutrition;) hence,
different plants (vid. above) have different w
no land can be NATURALLY *in* FULL *condi*
for general cultivation.

"Here then arises the necessity for judici
cultivation—hence the importance of a kn
ledge of the economy of manures, in order
produce luxuriant crops. For instance,
draining, subsoiling, and seasonable operati
we may render the soil in the mechanical c
dition required for the crop; if, however,
do nothing else, the chemical condition
becomes imperfect,—the *materials* from wh
the crop should be elaborated being want
These, then, we supply by manure, and, at
same time, also, even improve the mechan
condition of the soil; for some matters not
act as the direct food of plants, but affect
texture of the soil,—rendering it colder
warmer, lighter or firmer, &c.;—thus li
marl, active farm-yard manure, liquid man
and the dung of animals, at the same time
they supply the plant with some of the elem
of sustenance, have each a special action
effect on the physical properties and the ch
cal constitution of the soil.

"By a proper use of manures, therefore,

accordance with the principles now –

maintain the fertility of a soil, by re- it those matters which former crops ted.

crease the fertility of a soil by adding r share of vegetable food than prior taken from it, or by adding such as aturally possess.

hese grounds, then, we justify our t no branch of agricultural enquiry r importance to us, at the present hat which teaches us to increase the of the soil,—*an enquiry into the se of manures.* And as no part of enquiry has been so much over- at which relates to *waste manures*, rt is it of more consequence to the that a full knowledge should be nd of no manures is it more neces- e farmer should understand and economy, than of those which are in fact they commonly are really

conomy of the animal and vege- doms, the infinite wisdom of the beautifully and abundantly It is a scheme," observes Mr. H., nsation." That which the ani- n does not require of the solid f nature is of high value for sustenance, and the air which sed by the respiratory organs of by that very process rendered fit consumption. Animal respira- he other hand, preparing the air ing fresh support to vegetable

his view of the constituents of plants, d from which they derive them, we hough the absolute amount of matter same.—though we cannot *create* a , we can. by conforming to the con- nature, change that which is already to more useful shapes, and convert is dead to the eye, and which has riginal purpose, into new and living sefulness. And this by remembering e face of nature is kaliedescopic— ting fresh forms from a combination ne matter—it is necessary that all come from the earth should be re it, since *all things that have had life h future life*, and all matters contain- the elements which have been or ppropriated by vital action, will, if properly applied, be of use to future vitality. Hence we learn, that all animal and vegetable matters, or the remains of such, whatever purpose they may have served, or however valueless they may be esteemed, and all matters which contain any of the constituent elements of plants are fertilizers in some degree, if properly applied; and are, in fact, the manures on the economy of which we have to treat.

"Such being the matters which 'can supply vegetation with its organic or inorganic materials'—such the matters which, if not properly preserved and employed, are *waste manures*—the sources from which they may be obtained are many and evident. The *Farm*—the very birthplace and home of animal and vegetable life; the *Town*—where the products of every clime are gathered together, to minister to the personal and industrial wants of the population; the *Manufactory* and the *Workshop*—in which matter is continually assuming fresh shapes; and many *other localities* abound in such substances—substances which, existing naturally, or having served some useful purpose, though they contain the remains of animal or vegetable life, or other matters useful to vegetation, are either *wholly neglected* for the purposes of agriculture, or, for want of due economy and proper management, are *partially wasted.*"

Having thus introduced his subject, Mr. H. next proceeds to treat of the economy of—

"I. *Waste Manures of the Farm.*

"II. *Waste Manures of Towns, &c.*

"III. *Local Waste,*—i. e., matters existing only in particular localities.

On the subject of the first of these wastes—more important to the farmer because the loss he suffers is entirely his own—Mr. Hannam writes:—

"The waste manures of the farm consist of the *liquid*, or drainage, from the cattle sheds, manure heaps, and house; the *gaseous* evaporations from the manure yards; and *animal* and *vegetable refuse*, &c.

"Although the economy of these manures is of the highest importance to the cultivator, whose aim is *to produce much* and *cheaply*, in few cases is their preservation attempted, much less accomplished. There are those, however, who are apt to *attempt* an excuse for their carelessness on this head; but, as is generally the case with men who are anxious, when in a difficulty, to save *themselves* only, they impede each other. Thus, the *agricultural Triton* says, 'This candle-end and cheese-paring economy may do very well for small farmers, to whom a small saving is a great gain, and whose labor, being their only capital, may be safely and profitably invested in attention to this matter. On a farm like mine, however, where every operation is on a large scale, and where everything is done on a system, we cannot attend to these petty cares,—they would interfere with matters of more consequence.' "

"On the other hand, the *minnow*—the man of small means—is apt to say, 'Yes, undoubtedly, this is an interesting question to the *large* farmer. *He* must indeed *waste* as much manure as would serve for a farm like mine. As for me, however, I have but such a small place, and keep so little stock, it is not worth while to make any fresh arrangements, or to take the trouble of altering my plans.'

"Thus does each cover the beam in his own eye, while he exposes the mote in his neighbour's; forgetful that, by each exposing the other, we arrive at the truth, and conclude that if the business on a farm be *so extensive*, an improvement in the system would be equally great; and that if the size of another be *small*, the effect of a small saving would be *more apparent*. This the intelligent practicalist sees. 'If,' says he, 'by judicious economy, I save manure for one extra acre on a farm of fifty acres, on one of a thousand I gain, by similar management, manure for twenty acres; and the value of the saving is as great to one farm as to the other. What is saved is gained really, in this case: for if the land which may be dressed with the manure saved be left unmanured, I injure the crop and diminish the fertility of the soil; or if I buy manure, I increase the crop but injure *my purse*. In either case, I am calling to Jupiter for aid, and am not putting my own shoulder to the wheel; I am *paying for* that extra produce, which I might by judicious economy obtain at no cost, and am in fact *farming badly;* since, if I neglect the waste manures on my own farm and buy no other tillage, I am *not producing as much as possible*, and if I buy manure, I am not producing as *cheaply as possible*.'

"Of the waste manures available on the farm, the *liquid* is the most important in quantity. It includes, as we have stated the *drainage from the cattle sheds*, *farm-yard, and house*. The value of each, as a fertilizing agent, will be seen from the following examination of its properties.

"*The drainage from the cattle sheds* is principally *urine*, which, says Davy, 'contains the essential elements of vegetables in a state of solution.' The analysis of urine will explain this: thus, according to Spiengel, we find that, in one thousand parts of cow's urine, nine *hundred and* twenty-six are water, while, of the remaining seventy-four parts, forty p
urea, (an organic substance containing
portion of nitrogen, which it affords t
in the shape of ammonia,) and the re
ammonia, potash, soda; the earths—a
lime, magnesia, and silica; with a
mucus, chlorine, and sulphuric, phospho
other acids. 'The greatest value of
says Liebig, 'is when a manure is wante
shall supply nitrogen to the soil. And
is considered *that with every pound of a*
which evaporates, a loss of *sixty pounds o*
is sustained, and that with every pound o
a pound of wheat might be produced,
difference with which these liquid excr
are regarded, is incomprehensible.'

"*The drainage from the manure h*
scarcely less potent than that from the
it is, however, certainly not less valuab
consists of urine and a solution of the
matter of the dung and compost,—the u
ammonia especially; for it is to the urin
is in them that the solid fœces principa
their power of emitting ammonia. E
therefore, to the action of the weather,
plete edulcoration of the manure hea
place,—the urea and ammonia, (which
gone off in its volatile state, but exists i
bination with the acids,) various saline
formed with the bases potash, soda, ma
lime, &c., and other of the inorganic
tuents of plants, being extracted by the c
leakage of the water through it. Henc
the value of this liquid.

"*The drainage from the house*, though
potent as that from the cattle sheds a
manure yard, is neither insignificant in qu
nor poor in quality. In many establish
where the family is numerous, the q
made during the year is much greater t
generally imagined, as in it we include
description of washings, scourings, &c.,
in the house. It contains human urin
most valuable of all animal manures; a
and vegetable refuse, blood, &c., proli
ammonia; fatty matters, rich in carbonic
and soap, a compound of fat and soda,
the inorganic constituents of plants.

"Practical evidences of the high impo
of these liquid matters are numerous.
the observation of Mr. Milburn, the sec
of the Yorkshire Agricultural Society,
him to conclude, that as much liquid is
as would *have an effect equal to all th*
tillages employed by the farmer!"

We intend to continue our notice o
Hannam's excellent work in our
number.

FOR NOVEMBER.—1, Prescot, Coven-
ıbury ; 2, Poole ; 3, Poulton ; 4, Ec-
Applesbaw, Pluckley ; 5, Cartmel, Rib-
6, Preston; 7, Rochdale, Middleham ;
sford ; 11, Macclesfield, Newark, Liver-
kefield ; 12, Chelmsford ; 13, Bishop's
oughborough, Wilton ; 14, Ellesmere,
Iontgomery ; 15, Ottley, Major ; 16,
ı ; 17, Wellington ; 19, Truro ; 20,
Skipton ; 21, Ashton-under-Lyne : 22,
am, Congleton, Garstang, Rufford,
Wem ; 25, Winsford, Witney, Dar-
Frome, Chesterfield ; 26, Doncaster,
inster ; 27, Horsham ; 28, Chester,
Stretton, Woore, Uttoxeter ; 30, War-

◆

MANURES.

ned are the latest prices of several sorts
:e :—
st, 16s. per qr.
h Bone, 15s. per qr.
l Guano, £8. per ton. 15s. per cwt.
10s. to 12s. per cwt., according to
ty.
ıst, £6. to £6. 10s.per ton
ke, £6. per ton
, at the water side, 32s. 6d. per ton ;
and housed, 38s. to 42s. per ton.,
of Soda, 15s. 0d. (duty pd.) per cwt.
Potash (saltpetre) 26s. per cwt.
ion for Turnip Fly 10s. 6d. per packet,
ent foı three acres.
of Ammonia, 24s. per cwt.
of Lime, 12s. per cwt.
, £3. 12s. 6d. per hhd. sufficient for
acres.
, 28s. and 42s. per cwt.
c Acid, 2½d. per lb.

The Markets.

.T *has become an article of greater de-*
ring the latter part of the past month.
d white is in much request, and obtains
· advance ; other and inferior kinds are
This is in some measure owing to the
ime, which has prevented the usual sup-
me-grown. Barley, *for malting, has*
' 1s. per quarter.
and Beans *are also on the rise, the*
·e quoted 6d. and the latter 1s. per qr.
These prices will be maintained, though
able that wheat and flour may, previous
xt publication, recede a point or two.
& Mutton *are, notwithstanding rather*
portations than usual of foreign, worth
ney. Prime lots fetch fully as good
; at this time last year.

LONDON, Oct. 21.

		Per Qr.	
Wheat, Essex and Kent, new, red	40	46	48
White..................	46	50	54
White, old		52	56
Irish.................		0	0
Rye, old		30	34
New		36	—
Barley, Grinding		28	32
Malting		36	40
Chevalier.............		—	42
Irish.................		26	28
Bere..................		26	—
Malt, Suffolk and Norfolk		58	63
Brown		56	60
Kingston and Ware		60	—
Chevalier.............		65	—
Oats, Yorksh. & Lincolnsh., feed		20	22
Potatoe.................		23	24
Youghall and Cork black..		19	20
Cork, white		20	21
Dublin		19	20
Oats, Black		20	21
Scotch feed		21	22
Potatoe.................		23	24
Limerick		22	23
Londonderry		20	21
Beans, Tick, new		32	36
Old, small		36	40
Peas, Grey		32	35
Maple		35	36
White		32	35
Boilers		36	40

Seed, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..41
Mustard, White...... 6 7
Brown .... 8 11 per bush.

Flour, Town-made — 50
Suffolk.... — 38 per sk. of 280 lbs.
Stockton and Norfolk .... — 38

FOREIGN GRAIN AND FLOUR IN BOND.

Wheat, Dantzic		32	36
Hamburgh...............		30	—
Rostock		30	—
Barley		24	26
Oats, Brew		16	17
Feed		14	16
Beans	—	24	28
Peas		26	28
Flour, American, per barrel		—	21
Baltic		—	20

LONDON AVERAGES.

			£.	s.	d.
Wheat	4572	qrs.	2	9	2
Barley	3915		1	15	8
Oats	14896		1	1	7
Rye	366		2	1	2
Beans	1321		1	14	10
Peas	897		1	15	1

SEED MARKET.

	s.		s.
Canary, per qr.	52	to	56
Carraway, per cwt.	44	to	52
Clover, red, English	—	to	—
„ „ Foreign	—	to	—
„ white, English	—	to	—
„ „ Foreign	—	to	—
Coriander	12	to	18
Hempseed, per last	35	to	40
Linseed Cakes, Eng. p. 1000	£10	to	£11 —
„ „ Foreign, p. ton	£6	to	£8 —
Mustard, white, per bushel	10	to	14
„ superfine „	12	to	16
„ brown „	12	to	16
Rapeseed, English, per last	£23	to	25
Tares, English, winter p. bushel	5s 0d	to	6
Foreign „ „ „	—	to	—

LIVERPOOL, Oct. 22.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ⅌ 70lbs.	7	3	8	0
Ditto, red	7	0	7	4
Irish white, new	6	2	6	8
Egyptian	5	4	5	9
Oats, Eng. mealing, ⅌ 45lbs.	3	0	3	1
Irish	2	9	3	0
Welsh	2	7	2	8
Barley, Eng. malting ⅌ imp. qr.	34	0	38	0
Grinding	0	0	0	0
Irish and Scotch	4	3	4	9
Rye, per imp. qr.	30	0	32	0
Beans, English, per imp. qr.	37	0	39	0
Irish and Scotch	35	0	36	0
Foreign	35	0	38	0
Egyptian, per 480lbs.	31	0	32	0
Peas, English, per imp. qr.	40	0	42	0
Foreign	37	0	40	0
Malt, per imp. qr., fine	62	0	65	0
Flour, English, per 280lbs.	38	0	41	0
Irish	36	0	39	0
Foreign, duty-paid, per 190lbs., U.S.	26	0	27	0
Canadian	25	0	26	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	22	6	23	0
Irish	20	0	22	6
Indian Corn, per 480lbs.	28	0	30	0

PRICE OF AGRICULTURAL PRODUCE

LIVERPOOL, Oct. 21.

			Potatoes.	s.	d.
Hay, best	1s	1½d	Short tops	1	6
Clover ditto	0	11	Red apple	0	0
Green ditto	0	2	Cups	1	8
Vetches	0	0	Cattle	1	4
Straw.			Turnips pr ton	24	0
Wheat	0	4½	Carrots	33	0
Oat	0	5	Mangle	21	0
Barley	0	0			

DUBLIN CORN EXCHANGE—Oct. 18

	s.	d.		s.	d
Wheat, white (per brl.)	23	0	to	26	
„ red do.	21	0	to	24	
„ inferior, do.	20	0	to	21	
Oats, feeding, new	9	0	to	10	
Flour, first (per cwt.)	16	0	to	17	
„ second do.	14	0	to	15	
„ inferior do.	9	0	to	11	
„ third do.	6	0	to	8	
Oatmeal do.	10	0	to	10	

CHESTER, Oct. 19.

	s.	d.	s.	
Wheat, white, 75lbs. new	7	9	7	
Ditto, red	7	3	7	
Oats, 46lbs., new	2	8	2	
Grinding Barley, per 60lbs.	4	2	4	
Malting ditto, 38 qts.	5	6	5	
Beans, new, per 80lbs	6	9	7	

WAKEFIELD, Oct. 18.

Wheat, new, red, 45*s. to* 47*s.; ditto, whit* 46*s. to* 49*s., fine* 51*s. Oats,* 17*s. to* 21*s. fine* 22*s. per qr. Barley,* 32*s. to* 34*s. Beans,* *to* 39*s. fine to* 41*s.*

Cattle Markets.

LONDON, SMITHFIELD.

Oct. 21, 1844. ⅌ st. of 8

	s.	d.		s.
Inferior coarse beasts	2	8	to	2
Second quality do.	3	2	to	3
Prime large Oxen	3	6	to	3
Prime Scots, &c.	3	10	to	4
Coarse and inferior Sheep	2	10	to	3
Second quality do.	3	4	to	3
Prime coarse woolled do	3	6	to	3
Prime Southdown do	3	10	to	4
Large coarse calves	3	4	to	4
Prime small do	4	2	to	4
Large Hogs	3	0	to	3
Neat small Porkers	3	8	to	3

LIVERPOOL, Oct. 21.

	s.	d.	s.
Beef, per lb.	0	5	0
Mutton	0	5½	0
Lamb	0	0	0

CATTLE IMPORTED INTO LIVERPOOL,

From the 14th to the 21st Oct.

Cows	Calves	Sheep	Lambs	Pigs	Ho
3291	52	6122	—	4777	—

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

NOVEMBER—1844.

THIN SOWING—DIBBLING WHEAT—TILLERING OR STOOLING.

Mr. Hewitt Davis, whose pamphlet upon the subject of thin sowing we noticed in a former number, has so impressed a deputation from the Maidstone Farmers' Club, appointed to visit his farms in Surrey, with the importance of his system, that the club, upon the report of the deputation, and a discussion which ensued, came to the resolution—

> "That in the opinion of this meeting it is highly desirable, in a national point of view, that Mr. Hewitt Davis's system of drilling and cultivation, as expounded in his pamphlet, and reported upon this evening, by the deputation from this club appointed to enquire into it, should receive the serious attention of agriculturists, and should be tried as generally as possible by way of experiment."

With great deference to the gentlemen of this deputation we would observe that the time of year selected for their visit was not exactly that best suited for examining the question thoroughly, although at Addington farm they had the advantage of seeing the wheat drilled; nor is their report so satisfactory as it would no doubt have been had their visit been differently timed, or had they in short paid a succession of visits, which, for a perfect elucidation of the subject, appears to us necessary. The report is very interesting upon many points of Mr. Davis's management, but upon this particular one, to which their attention was, or ought to have been, exclusively directed, we must say that it is meagre and unsatisfactory, and we are not at all surprised to find the club coming to the sort of resolution it did. What ground had it for any other resolution? The deputation at Spring Park saw the stubbles—the roots were remarkably strong, and the tillering or stooling had extended to eight or ten stalks. The deputation moreover saw the stacks, and the members satisfied themselves that "the straw was exceedingly strong and the ear very fine;" but so indeed might be said of roots, straw, and ears of wheat sown commonly thick: there is nothing, therefore, in this part of the report which should guide the club. If we might presume to advise the Maidstone Farmers' Club, it would be that its deputation should go to Mr. Davis's farms, not once or twice, but three or four times. At Addington farm they saw the wheat drilled, we presume, in the quantity of three pecks of seed to the acre; the deputation should inform the club what sort of seed of what particular variety of wheat—the width of the drills, and the state of the soil; its quality is described as better than that at Spring Park, which latter is thus reported:—

> "The soil of this farm consists of black sand and beech gravel, with a subsoil of white sand and gravel. The moor-pan formerly consisted of exceedingly hard conglomerate masses of gravel and apparently ferruginous sand, some of which were so large as to require six horses to draw them off the field. They are very similar to what is called pudding stone, and the soil is evidently, from its appearance, a very inferior one, requiring pressure to consolidate it."

The deputation should then examine the plants when being hoed the first time; it would be able to report upon the appearance of the crop after having withstood the winter—the probability of good tillering or stooling, upon which indeed the whole system rests, and the process of hoeing, which might be advantageously noticed. Another visit might be profitably made when the grain stalks were fully formed; this, however, we do not so much insist upon, but surely at the time of harvest another visit should be paid, when a portion might be cut, thrashed, and weighed, in the presence of the deputation, which would give the actual return per acre, and should be taken from an average part of the crop, neither that part of it which may be estimated to be the best, nor that obviously the worst: a report after this would be a document to guide not only the Maidstone Farmers' Club, but every similar society, and indeed every farmer in the kingdom whose soil and climate at all corresponds with that of Mr. Davis.

So much for the Maidstone deputation. Now as regards the system sought to be introduced by Mr. Davies, and which the resolution we have above quoted recommends to the careful experiment of farmers. Much has already been written and said on both sides. We see from a recent American agricultural journal that Mr. Davis has made himself heard on that side the Atlantic, and no wonder: those who have ever *observed the* strength of plant acquired by wheat where it has had room enough throw up its lateral stems will readily liste when they are told that every single grai would, and does, make the same natur effort to grow vigorously and quickly, b being crowded together, and the sun a air excluded, they either give it up a die, if very much over crowded, or not quite so thick, they "draw each oth up" into thin straw, and produce light grai for want of that sufficient channel of com munication with the soil which a stron straw affords. In this country the syste is now undergoing some discussion. Th celebrated Captain Barclay Allardice, Ury in Scotland, in a letter recently writte upon the subject of the much vaunted co steeps, observes in reference to thin sowing

> "During an experience of 40 years, I ha always sown 4 bushels per acre of wheat, fro 2 to 3 of barley, according to the state of t land, and 6 of oats, per imperial acre. T question is not—how small a quantity of se can be disposed of on an acre?—but what is t return? I am satisfied, had I sown Mr. Cam bell's steeped seed at the rate of 6 bushels acre instead of 4, the returns from the steep and unsteeped would have been about the sa there is no rational reason that it should have been so, the land being exactly the quality, and equal justice done to the wh We all know that less seed would be requ in a garden than in a general soil of a fa therefore, what Mr. A. or B. may find suffi on their land, can be no general rule whate therefore it is absurd to be publishing such derdash. A farmer must regulate his see by his own experience and observation, as other matters on his farm; and, if he does possess either observation or discretion, I w recommend him to drop the trade of farmer."

Other professed practical agricultu have, in the newspapers in various part the country, proclaimed themselves op nents to Mr. Hewitt Davis and his sys and have given as the quantities of per acre, usually sown by them, fig which lead us to the inference that run into the opposite extreme of too sowing. The following, which we from an Irish paper, will be read with terest. Although we cannot inform

readers what a Cunningham acre is, and, therefore, cannot say whether the quantity of seed applied was unreasonably thick or unusually thin, yet the writer cannot be mistaken in his object.

"I have perused the several articles in your late numbers on the subject of 'thick and thin sowing,' and I very highly approve of the recommendation given in your last publication, that the matter should be tested by numerous and careful experiments. Having myself made experiments on the subject, my attention having been devoted to it for many years, though I do not allege that my experiments have been carried out to an extent sufficient absolutely to decide the question, yet, as they have satisfied my own mind, and have decided my practice, I am induced to submit to you the result, which is quite in accordance with the views of 'Philo Agricola,' the correspondent of *Bell's Weekly Messenger*. Ten years ago, being impressed with the great importance of saving a large proportion of the corn expended in seed, I made a careful trial, on a piece of nice clean potato land, an acre in extent, of sowing wheat in drills, made with the hand drill or rake described by Cobbett. The drills were 12 inches apart, and the seed dropped as nearly as possible at 2-inch distances. Of course, the crop came up very thin, and it was further thinned by the larks, who generally take a portion just when the seed is coming through the ground; and from that and probably other accidents which ever will occur, I had a very thin crop; and though the produce was much greater than could have been expected from the appearance of the crop when standing, it was very far indeed from the full crop which other lands in similar condition produced that year. I therefore abandoned this extreme thin sowing, but still held the opinion that moderate thin sowing was the better plan, to allow sufficient room for the tillering of the roots, and for some years I limited my quantity to 1½ cwt. the Cunningham acre, and had very good crops; but my brother, who was cultivating an adjoining farm, held a different opinion, and sowed 2 cwt. to the acre, and his crops, year after year, rendered him a greater return than mine. I maintained my ground with some obstinacy, but at last, after several years, the result being invariably in favour of his system, I gave way, and I now sow the large quantity of 2 cwt. the Cunningham acre, and I am even of opinion that that quantity might be increased with advantage, when the sowing takes place in February and March, for though during the last two years my wheat sown at that season on turnip ground has been very fine in quality, it has stood thin, and the produce has been less than from land sown at November, on which the tillering process had been more complete.

"I know the cause of this thinness, this year, was the dry weather in spring, for at first the roots seemed to be spreading most vigorously, and many shoots were forming, which were completely checked by the long drought, and when the rain came none but the leading shoots pushed forward; but such an occurrence was very likely to happen, and some cause producing thinness may be expected to occur frequently, and on the whole I am persuaded that it is very unsafe to trust to thin sowing in the average of soils and seasons. I think also sound theory will sanction the use of plenty of seed. Bulbous plants with large leaves, which derive so much of their nourishment from the air, evidently require abundant space to expand those leaves, and theory and practice coincide in the propriety of allowing them abundant space, but the corn having small leaves, and deriving much less from the air, and being mainly dependent upon the soil, and the ear, in which the seed is formed, being at the top of the stalk, waving in the breeze, and abundantly ventilated, are very differently circumstanced from bulbous and tuberous roots lying on and in the soil. My theory and practice lead to the conclusion, that if the soil be in high condition, it is capable of bearing to maturity a heavy crop any of corn and grass, and that it is more sure and profitable to give plenty of seed.—*J. A.*, *County Down, October 7th*, 1844."

Perhaps in this, as in all other cases, true safety will lie in a middle course.

We propose to continue our remarks in a future number; meantime we invite our correspondents to a discussion of the subject, for which we shall be happy to afford space in our columns.

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The Lords Commissioners have directed that guano imported from Ichaboe, or other places on the west coast of Africa, in British ships, and sold for the first time, it is to be passed free of the auction duty of one-half per cent., hitherto charged on the sale of that article.

SKILL AND CAPITAL

IN THE MANAGEMENT OF FARMS.

We cannot draw too much attention to the very excellent speech of Col. Rawstorne, at the late meeting of the Preston Agricultural Society, fully reported in our last number. The facts mentioned by Col. R. are every way worthy of the serious consideration of the landowners of England.

The difficulty to be overcome appears to us to be this—to substitute tenants with skill and capital for those who have neither; and this is a duty the landowner owes as well to the country as to himself. If A., B., and C. *cannot*, for want of capital or skill, or *will* not, cultivate in an improved manner their farms of 150 acres each, and there is any difficulty in finding men of capital and skill who will so cultivate them, our advice is to throw the three farms into one, and upon a corn-rent lease abundant offers will be made by men who will improve the larger farm; the fact according to our experience being, that the small farmers as a class are not either wealthy or skilful.

There is plenty of capital in the country in the hands of skilful farmers, but they will not, nor is it likely they should, employ it in *small farming*. The profits of agriculture being small it must be carried on upon a large scale to admit of a suitable return: it is even so with manufactures; the profit upon a yard of cotton cloth, a sheet of pins, or a set of coat buttons, is very—very small, but it is the aggregate amount of many such profits upon thousands of yards, sheets, or sets, that makes the manufacturer of Manchester and Birmingham what he is: so it is of the acreable profits from land.

We hope we may lie under no misconstruction in what we have written: we do not by any means wish it to be understood that there should be no small farms, or that no small farmers have skill and capital; many have one and some have both these essential requisites to agricultural *success: we know* many such: but of large farmers the rule is that all have or ought to have capital, and having it are more likely to have the means from their very wealth of acquiring skill—they have the advantage of education, and an acquaintance with books—they can afford to bring their research to the test of actual experiment—they can take the advantage of markets either in buying or selling, and are thus capable of obtaining more from their farms than others without these advantages can possibly do; rent, therefore, to them is a matter of less importance than timely and judicious bargains and heavy crops. To illustrate our position let us imagine an arable farm of 500 acres—upon such an one a difference of 2s. 6d. per bushel in the price of his wheat, and 2s. in the price of his barley, will either make his rent for the farmer, or he will suffer a loss to the extent of it; or, an increased production of 1[illegible] bushels of wheat, and of 15 bushels of barley per acre, will, in the same way, at an average price of 7s. 6d. for the one, and 5[illegible] for the other, effect the same object: so the difference of a pound a-head on the price of lean cattle, and a few shillings per head in the sheep stock bought in for feeding, and the same difference in the selling [illegible] them again will go far to make up the rent [illegible] rent, as compared with markets, and productions from the land, is not a first consideration. How often does the holder of a fine farm, for which he no doubt, in his own opinion, pays rent enough, on travelling through a poor country—the surface flat—the soil a few inches of miserable hungry stuff, resting upon a wet retentive clay fit for nothing but brick-making—how often does such a man mentally exclaim, "Well come, I would rather farm my own land, even at the rent I pay, than this wretched soil, at a nominal rent;" and he is in every such case right; rent, as compared with the productive quality of the soil, and skill and capital to turn every yard of it to the best account, is really almost unimportant. At the same time not let us be charged with the folly of holding that the amount of rent which may be demanded for even the best of soils is not a question of anxious consideration for the farmer—gold may be bought too dear,—all that we contend is that rent alone, however moderate, is not the only question; skill, by which means the land shall be brought to the highest state of cultivation and production, and capital, by the aid of which the farmer shall take advantage of markets, are equally necessary, with a moderate rental, to his success.

Therefore it is we say that a landowner is not justified either to himself or the country by letting his lands to farmers who have not the means to render them in the highest degree productive—therefore it is we contend that it is his duty to see that his lands are so managed; not by the restraints of a lease which legal ingenuity has lengthened by adding covenant to covenant, until a tenant really does not know what he may legally do and what he may ot, but by a letting at such rent and upon ch terms as shall render the farmer safe n his investment of capital upon the farm e holds, by giving him the advantage of very bushel of grain he can produce beond a stipulated quantity, and by giving im that quantity also at a fair market rice, or in other words by adopting a corn-nt principle, and sanctioning it by a lease f not less than 18 years, which shall provide for the adjustment in an amicable way f this question:—Is the farm better or orse at the end of the term than it was at he beginning—if worse, let him pay for he injury—if better, let him be allowed, if e quits the farm, for his improvement, hat shall be a fair and reasonable sum for he landlord to pay as a consideration for his aving a better farm than he had before.

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Storing Turnips.—Various modes of oring turnips have been recommended, ch as placing them close together on a ass field, their tap roots, but not their tops, being cut off; cutting off the tops, and throwing some earth over the bulbs with the plough, &c. The best plan, is, however, to raise them in dry weather, cut off tops and tails, draw them home, and form them into clamps five or six feet wide at bottom, and brought to a point like a potato pit, at the height of four or five feet. The clamp should be made in an open place, and thatched with wangles (bundles) of straw, which should be secured with ropes. So treated and turned in the beginning of March, and again early in May, we have seen Swedes as good in June as at any time in winter. Where space is scarce a greater number may be placed on a given space, by poles fixed in the ground, with branches laid along the inside. Mangel-wurzel may be stored precisely in the same way.—*Irish Far. Gaz.*

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STORING CABBAGES.

The great necessity which exists for preserving in the most careful and effectual manner everything which can by any means be made available for cattle-feed during the ensuing winter renders the storing of cabbages a question of great interest at this moment. We copy, therefore, the following methods, verbatim, from several contemporaries:—

"Your correspondent 'Querist' wants to know the best way of preserving cabbages in winter. I have little to communicate on the subject; but to what I have, if of any use to him, he his welcome. I have been informed that Drumhead cabbages are preserved in some parts of Oxfordshire in a way somewhat similar to that of storing potatoes out of doors. The cabbages are taken up on a dry day, and the stem and loose leaves taken off; they are then put in heaps in a manner like cast-iron bullets in an arsenal broad at the bottom and narrow at the top; afterwards they are covered with earth. Some years ago, I tried to preserve a few barrowfuls of early York cabbages in winter; I stored them in an outhouse in two lots; one lot was covered with sand, and the other with sawdust; it was done in October. I examined them about the beginning of January, and found that the rats had nearly destroyed them all; the few that remained had the outside leaves rotten, but the heart was good.—*Peter Mackenzie.* [To this we add the following from a correspondent]—Dig a pit in a dry place, say ten feet long and five or six deep; put in a little dry straw at the bottom; then place your cabbages (first depriving them of any decayed leaves) on it; put a little dry earth over them, another row of the cabbages, more earth, and so on till the pit is full; then cover them with dry reeds or ferns, and put the earth that has been dug out of the pit over them in the shape of a roof, beating it down well, so as to exclude the air and heat; in this way I have found cabbages to last me till new ones came in, and much longer.—*J. B. Warren, Crookston.* In addition to this, *R. G.* says—About two years ago, I was staying with a friend, whose gardener was then about storing his cabbages, of the large Drumhead kind. He cut them off, turned them down, and let them drain for a day or two; then marked out a spot on which he placed a few pea-sticks. On these he placed the cabbages, with their heads down; then a few more sticks, or pea-haulm, for the next tier, and so on, just as you may have seen cannon-balls piled. Outside he put a little straw or slight thatch, just sufficient to throw off the wet, and to allow a good circulation of air. In this way, he assured me he would keep them till March or April for the family use.—*Gard. Chron.*"

"Where the farmer has not cellar room enough for storing his cabbages, most of them may be secured in the garden; and the best method for that purpose is to dig a trench of any desired length, drive a crotched stick in each end, place a pole on the crotches, tie the roots of two heads *together and* hang them across the pole, being careful not to let the heads touch th ground; then place fine brush on the and over that put long straight straw, an cover the whole with a thin layer of eart leaving a small hole in each end for the a to escape."—*Central New-York Farmer.*

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SULPHUR IN PEAT SOIL.

In reply to *P.*'s query on the presence sulphur in peat soil, I believe sulphur i rarely found existing pure in any situatio in this country, and when so, would not b injurious to plants, as it is quite insolub in water. Sulphur in combination wit oxygen, in the form of sulphuric acid, exis in most peats in a greater or less degre and when present in any considerable d gree is highly deleterious to plants: it known as the "oil of vitriol" of commerc To *detect* its presence, take a pound of t peat earth which has not been exposed the air, dissolve it in a quart of rain wat let the mixture stand twenty-four hou then strain through fine muslin; add to t liquid so strained half an ounce of carb ate of soda. If sulphuric acid or any ot injurious acid should be present in exce an *effervescence* will take place, and quantity may be judged of by its degree effervescence. Should it not effervesc is probable iron exists in it in excess. T may be detected by adding a few drops tincture of galls to the strained soluti above spoken of, when, if it exists, it w become black like ink. As it is most pr bably acid which produces these effe perhaps the best mode of *counteracting* it, adding lime to the earth and mixing int mately, or chalk would be better. T must be saturated with dunghill draining or water from a stagnant pond, and allow to remain several weeks. The lime w take up the sulphuric acid, and become su phate of lime or gypsum; this gypsum wi fix the ammonia of the manure draining and form that valuable manure, sulphate ammonia. It may be laid on grass land i x month's time. Should iron be very oundant in it there is nothing but frequent urnings and exposure to the air. The iron ttracts oxygen from the air, and becomes xide of iron, which is harmless to plants.

It might be useful if *P.* would state the esults of his investigation, and also of the node he adopts of counteracting and applying the earth, and its results.—*M. M. M.* *Thorpfield, Thirsk.*

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KOHL RABI.

SUBSTITUTE FOR THE SWEDISH TURNIP.

The deficiency of the turnip and Swede rop, in consequence of the extraordinary ought of the last summer, and the inumerable destructive insects, fly, grub, c., produced by the dry and warm ather, has been a lamentable blow to e farmers of this county, and should lead riculturists to endeavour either to eradite those enemies to their hopes, or to inoduce a root equally valuable with the nip, while it is less obnoxious to the atcks of those vermin. The Kohl Rabi pears likely to supply this desideratum; d I wish, by giving you an account of y experience of it, to induce the farmers f this county to try it on a larger scale. If e can obtain a root (if I may use the rishism of calling that a root which grows bove ground) producing an amount of od—1st, equal in bulk to the largest crop f Swedish turnips; 2nd, of equal or more utritive qualities; 3rd, not obnoxious to e attacks of grub or fly; 4th, better dapted for keeping through the winter; th, capable of being planted at any season f the year; 6th, enduring the frosts of our inter—we shall have obtained one of the ost useful and valuable plants which the iver of all good has bestowed upon man. erhaps I may be considered too sanguine I attribute all these qualities to the Kohl abi, but I feel convinced that it deserves he greatest part, if not all the praise which ascribe to it. I obtained a small quantity f seed in Germany last year, and in the month of March I sowed (thickly) a patch in a sunny bed in my kitchen garden; the plants soon came up as thickly as possible, much resembling young brocoli plants. The dry weather set in, and I despaired of being able to plant them out in the ground which I had prepared for them. After waiting several weeks, and fearing that the plants had become almost too old to transplant, I ventured to do so lest the season should go by. I made a good strong compost with cow-dung and water from a muddy pond, and another sort of diluted pig's urine, and in planting each plant (about 18 inches apart,) I made a good puddle about the roots; in less than a week the plants held up their heads, and began to grow vigorously. In October I gathered in my crop, and the result is as follows:—On a plot of ground, as nearly as I can reckon, containing 18 perches or lug, I had 27 kipe baskets full, weighing on the average 80lbs. each, or, deducting 5lbs. for the basket, 75lbs. each; thus I had 2,025lbs. on this small piece of ground, besides four or five cwt. of mangel-wurzel and self-set potatoes. This, however, was the produce of the driest season in the memory of man. I have no doubt that more than double the amount might be expected in any other season. Several of the bulbs weighed six or seven pounds. I sowed some more seed on chance, without any manure, in a soil rather impoverished, in the month of June, having waited in vain for rain. The plants came up, but did not thrive. During the last month, after I had dug a field of potatoes in a good soil, I transferred these sickly plants to the late potato patch, where they have taken root, and are growing surprisingly; I purpose letting them stand the winter, and have little doubt that they will endure the frost and snow. The bulb partakes of a mixed character, something between the inside of a cabbage stalk and a Swedish turnip. When young, they are an excellent and delicious table vegetable.

The seed should always be sown in a bed, and transplanted; it grows more rapidly, and would secure it from the attack of the fly, if it were inclined to attack it, which I believe it never is.—*Samuel Lysons, Hempstead Court, near Gloucester.—Gloucestershire Chronicle.*

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EXPERIMENTS

WITH MANURE, SOWING WHEAT, AND HORSE-KEEPING.

At the late meeting of the Witham Agricultural Society the President read an account of the following experiment with manure:—Much has been said respecting the management of farm yard manure, some contending that rain or water injures the quality of such manure, and renders it worthless. Others believe that such manure cannot be made without a considerable portion of water, as dry muck will mould, and lose all its fertilising qualities. The following experiment was made this last summer, 1844:—On the 15th of November, 1843, 10 Scots were put loose in stalls 12 ft. square, fed with bean meal, cut hay, malt coombs, and oil-cake. Each bullock foddered or littered with one truss of good wheat straw per day, 36lbs. per truss, carefully weighed; cleaned out once a month; no urine escaped, all was absorbed by the daily large quantity of straw foddered. On the 13th of January, 1844, five stalls were cleaned out, and the manure weighed the same day, carefully laid by itself, and covered nine inches thick with earth—no evaporation escaped; stirred over three times and watered each time, as the manure was disposed to mould very much. On the 4th of April weighed again, and carted upon the land for oats; not very rotten; the carts were filled exactly three tons weight, and laid upon one quarter of an acre. On the same day, 13th of January, the other five stalls were cleaned out, and laid upon dry ground, all exposed to the weather, from the 13th of January to the 4th of April, weighed and managed exactly as the other five stalls, stirred in the same days, watered when stirred; what drained from it was thrown upon the heap of manure. Exactly three tons laid upon the same quantity of land. The whole threshed directly out of the field, 24th August. One quarter of an acre of oats produced, from the manure closely covered up, 18 bushel 1 peck; weighed 38lbs. per bushel. Straw 5 cwt. 1 qr. 18lbs. One quarter of an acre, not *covered up,* produced 17 bushels 1 peck; weighed 38 lbs. per bushel. Straw 5 cwt. 1 qr. 6lbs. In tabular form they will stand thus:—

	qrs.	bsh.
Covered manure, produce	9	1
Not covered	8	5
In favour of covered manure ..	0	4

	cwt.	qrs.	lbs.
Produce of straw, per acre covered	21	3	10
Ditto not covered	21	1	10
In favour of covered manure	0	2	0

On the same day, one quarter of an acr was manured with one cwt. of guano, an produced 19 bushels 37½ lbs. per bushel Straw, 24 cwt. 7lbs. Oats guano-manured equal to 9 qrs. 4 bushels per acre: stra 24 cwt. 2qrs. per acre. The guano-manure exceeded three bushels of oats per acr more than the covered muck.—N.B. G ano was sown on wheat, barley, oats, an carraway, upon another farm, a differe soil, subsoil clay; no benefit was observe The drought continued a long time.

The following paper was then read:—*Sowing Wheat.*—August, 1843, one quar of an acre of a very gravelly soil—in a h summer producing but little—was, aft peas, ploughed four times in the same d with six horses, 15 inches deep; dibble with wheat in October, and produced the rate of five bushels 3 pecks per ac more than the land by the side of ploughed in the usual way for wheat fi inches deep. Straw 3¾ cwt. per acre mo than the adjoining land of the same meas and same soil. This same field is subje to Wire-grass in the autumn; in a fe weeks it is thickly coated. One acre w hoed and burnt, costing 10s. per acre. O acre by the side of it ploughed with a whe coulter. All dibbled; no visible differen throughout the year either in produce o in cleanliness of the land during the summe or this autumn, 1844. One acre in the sa field was folded 14 nights with 200 sheep f in the day-time on stubbles—no oil-cake o corn. The other part of the field all m manured: ten tons of good muck per acr The folded wheat exceeded the manure wheat 2 bushels 3 pecks per acre, and th straw 3¼ cwt. per acre. The folded whe 1lb. 4oz. per bushel the lightest.

Experiment upon Horse-keeping.—June 2 1844.—Two cart-horses in good conditi were kept loose in the stable, seven day without going out of it, kept upon gre tares and corn. Consumed in the seve days, 12 cwt. 1qr. 8lbs. of excellent gree

at the top of their growth, before
loomed: dry weather: no waste.

	cwt.	qrs.	lbs.
ck of Oats per day per ush. 2 pecks weighed .	1	1	7
. .. .	0	2	4
nd chaff	1	3	11
. .. .	12	1	8
nsumed in one week ..	14	0	19
sumed in weight in 7 days	7	0	9

113 lbs. per day for one horse.
allons of water per horse per day.
s littered for 7 days, one truss of
w per day, 36 lbs. per truss.

	cwt.	qrs.	lbs.
lbs. of straw and the above water.—Weight of manure w state at the end of the	12	2	3
5th of August.—Weighed ck made from the green ter lying in a dry stable six stirred over four times, four water (that is, 16 gallons) upon it, as the dry muck d it every time to prevent lding. It was not very rot- was removed with a fork, el used: weighed this day.	5	1	10

The stable was a sound old brick
th a gutter in it; a ten-gallon
vas placed at the fall of the gutter,
ented carefully. No urine could
Only 21 quarts of urine in the
ays drained into the reservoir.
xperiment on Horse-keeping—with
—Monday, the 7th July, 1841.—
t-horses (not the same as before
d, but of the same size and con-
vere kept in the same stable upon
and not removed for seven days.

	cwt.	qrs.	lbs.
excellent Clover hay con- in the 7 days	3	0	7
oats per day per horse ..	1	1	0
f..	0	2	4
onsumed in one week ..	4	3	11
nsumed in weight in 7 days	2	1	19

39lbs. per day for one horse, upon
Drank 12 gallons of water per
orse.

	cwt.	qrs.	lbs.
f manure in its raw state, 2 lbs. of straw, and food er	10	1	2
The same, after being kept in the stable 6 weeks, stirred over 4 times, 4 pails of water each time (great difficulty in preventing its getting mouldy): it weighed	6	0	2
Decrease in weight	4	1	0

Only 13 quarts of urine drained from the dry food.

	cwt.	qrs.	lbs.
Observe, manure made from green food, when in a proper state to be carted upon the land	5	1	10
Difference in weight in favor of green food	1	0	10

Notwithstanding this increase of weight in the green food, it is presumed the manure made from the dry food is of the most value.

The President then said, Mr. W. Hutley had put into his hands the following paper relative to experiments with wheat drilled on the same description of land:—

Account of the Produce from different quantities of wheat, drilled on equal quantities of land.

No. 1. Drilled at the rate of 4 pecks per acre, rows 12 inches apart.

	qr	b	pk	pt
Produce—Wheat, best	3	3	1	2
Seconds and tail.. ..	0	1	1	5
Total	3	4	2	7

Straw 12 cwt. 13 lbs.

No. 2. Drilled at the rate of 6 pecks per acre, rows 6 inches apart.

	qr	b	pk	pt
Wheat, best	3	5	3	0
Seconds and tail.. ..	0	1	1	2½
Total	3	7	0	2½

Straw 15 cwt. 15lbs.

No. 3. Drilled at the rate of 9 pecks per acre, rows 6 inches apart

	qr	b	pk	pt
Wheat, best	3	6	1	5
Seconds and tail.. ..	0	1	3	3
Total	4	0	0	8

Straw 15 cwt. 3 qrs. 21 lbs.

N.B.—No 1 was about a week later in ripening than the other two pieces.

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DARLINGTON FARMERS' CLUB.

At the November monthly meeting of this club, held on the 11th ult., at the offices of Mr. Thos. Dixon, land-agent and surveyor, their honorary secretary, the subject under discussion was, "*The proper time for ploughing, preparing, and manuring land for Beans and other crops.*"

Henry Chapman, Esq., the chairman, on introducing the subject, said that he had long been a cultivator of beans, but not always a successful one, yet he believed by good cultivation they were generally both productive and profitable, and, therefore, well worth the farmer's best attention; and as the Darlington Farmers' Club was established with a view of improving the cultivation of the neighbourhood, and by that means increasing the amount of produce, and as bean growing forms a prominent feature of the farming of this neighbourhood, he hoped that the members then present might profit by the present discussion. He further observed, that having received a clever paper on the subject of bean culture from the pen of Mr. Davidson, he perhaps could not do better than immediately read it. A lengthened discussion followed on the preparation and manuring the land for beans, in which the chairman, vice-chairman, secretary, and several other members took an active part; and as there was not sufficient time to enter upon the preparation of the land for other crops, it was thought better that the present discussion should be confined to beans only, and that other crops should form a separate discussion at some future time. The unanimous conclusions come to at the meeting were, that the best time for manuring and giving the land the first ploughing is in autumn previous to the winter's frosts, after which the land should be ploughed once at least in the spring: the manure applied is best about half rotten, and the land ought to be ploughed deep and kept thoroughly gripped through the winter, so that no stagnant water may remain in the land. Dibbling beans was recommended in all cases in preference to sowing broadcast, as by that means the land can be hoed and kept free from weeds whilst under crop: *the Suffolk drill* answers well on most soils; ribbing and drilling with barrow-dri
answers well in many cases, but in
quence of the seed spreading more
drills by this process, makes the cro
difficult to hoe. From eighteen to
inches was considered a good width
the drills.

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HOLYWELL FARMING SOCI

The annual meeting of this Socie
held at Holywell, on the 8th ultimo
match for ploughing was won, after
contest, by John Barclay, of Bistree
show of stock took place in a spaciou
of ground behind the King's Arms
The exhibition gave very general s
tion. Many valuable and highly serv
animals were exhibited. Among th
most admired—and deservedly so
animals belonging to Lord Mosty
Dawson, of Gronant, Mr. Harrison,
thaelwyd, and Mr. Absalom Ben
Mertyn; his Lordship's bull exciti
marked attention. Some very goo
ink cows were shown. The med
prizes were awarded to Lord Most
Pyers Mostyn, R. J. Mostyn, Esq.,
cott, and Mr. Kerfoot, Vaenol Fawr

Some very promising two year old
were also exhibited by Lord Most
Mr. Dawson—that belonging to hi
ship being the finest of her age w
seen for some time. We should thin
were twenty pairs of one year old
in the field; and Lord Mostyn, Mr.
and Mr. Robert Peters were the su
claimants for the prizes in this class

The exhibition of pigs was exce
good, and some fat ones belongin
Pyers Mostyn, Mr. Taylor, of Coe
and Mr. Roberts, of Bodidris, excit
siderable attention, as did also a v
boar belonging to Mr. Roden. T
breeding sows were the property o
Mostyn, and Mr. Simon, of Gre
Fine specimens of long-woolled ra
exhibited by the Rev. Madoc W
and Mr. Dawson; and of long-wooll

ves, by Sir P. Mostyn, Mr. Daw-
Ll. F. Lloyd, Esq.; the short-
ewes and threaves belonging to
, of Kelsterton; Mr. Roberts, of
; and T. Lloyd, Esq., were ad-
orthy of marked commendation.

ow of horses for agricultural pur-
s very good. The prizes for this
re principally gained by Lord
Mr. David Parry, Vaenol; the
yd Mostyn, Mr. Hughes, Cornist;
oot, Mr. E. Jones, Marsh Farm;
es, Hope; and Mr. Dawson, of

was some fine extra stock in the
luding two fine sows, eight months
by Mr. Mostyn; a pen of long-
ewes, by Ll. F. Lloyd, Esq.; three
ilk, and a yearling colt, by Lord
a boar, six months old, and a sow,
ths old, by Mr. James Wood, of
l; and a capital fat cow, by Sir
ostyn.

llowing are the names of the gen-
ho have this year officiated as the
tors of the society:—*Inspectors of*
Mr. James Symonds, Greenfield,
Lloyd, Llanasa; *Judges of Turnips:*
iam Davies, Mostyn, and Mr. John
Argoed; *Judges of Ploughing:* Mr.
illiams, Celyn, and Mr. Griffiths,
Judges of Stock: Mr. Peter Carter,
ark, and Mr. Warburton, Sandi-
ad.

dinner the following addresses
livered:—

hairman (CAPT. MORGAN) said, the
e upon which the Holywell Farm-
iety was founded was this—that the
l should do his utmost to benefit his
and the tenant should do all in his
o please his landlord, without injury
elf. He should be very much sur-
f he found any gentleman of pro-
onnected with the society recom-
g and enforcing improvements that
olely for his own benefit; and he
xpress his belief that such was not
the case. Certainly he had heard it recommended to the tenantry to get their land and their stock improved as far as practicable; but he hardly thought landlords would expect their tenantry to drain at their own expense; and if they did so recommend, he should not be surprised to find them disappointed. There were several ways by which draining might be carried on. The landlord might take upon himself the first expense, and charge a per centage upon his outlay; and this plan appeared to have been extensively acted upon in some parts of the country. Another plan which he had adopted himself, on a small scale, was for the tenant to do one-sixth of the whole; and where this had been done, he had no hesitation in saying that the next wheat crops gave an ample return to the tenant, while the land was permanently benefited. With regard to stock, the benefit of improvement in the breeds of cattle went directly into the tenants' pockets; and he thought, therefore, every farmer must at once perceive the advantage of rearing the best stock. But a great deal was said in these days about the granting of leases, and it was very frequently urged that landlords always shewed an indisposition to grant them. So far as the operations of this society extended, he was not aware that when tenants applied for leases they were in the habit of meeting refusals from landlords. But he must here observe, that it was to him exceedingly doubtful whether leases were really beneficial to the tenant. A farmer, for instance, may take a lease for twenty years, and at the end of four or five years he may find out that he has made a bad bargain; the landlord might then refuse to cancel the lease, and the ruin of the tenant must be the inevitable result. Leases in his opinion, were a greater security to the landlord than to the tenant; and he might state that since he had come into possession of what little property he enjoyed, he had never, except in one instance, been asked for a lease, which he at once

granted, It had been urged also, that to make even leases beneficial, a corn-rent must be appended; but his firm conviction was, that corn-rents were injurious in their working to both landlords and tenants—to the landlord if corn sold at a low price, and to the tenant if it went at a high figure.

The Hon. E. M. **Ll. Mostyn** said, these were not the days for standing still; the discoveries of modern science had wrought such a change in every department of agriculture, and these discoveries were adopted so extensively elsewhere, that if they were to maintain their present position, they must not think of allowing their neighbours to excel them. As a sample of the valuable discoveries which had recently been applied to farming pursuits, he might refer to the use of guano—a manure which he believed had done more to benefit agriculture than anything that had ever yet been made known. Certainly, neither guano nor any other manure could be beneficial where draining was not attended to. (Hear.) He was one of those who subscribed to the doctrine, that property has its duties as well as its rights; and would be the last man to maintain that landlords, because they were such, ought to be regardless of the interests of the occupiers of the soil. On the contrary, they ought to identify themselves with their tenantry; and by thus making themselves acquainted with their position and circumstances, they would be the better able to appreciate their wants. (Hear.) It could not be expected that the tenant occupier should lay out his money in improvements, without a guarantee from his landlord, and therefore he was favourable to leases as the best security; and if a man of capital came to him and asked for a lease, he should have one. (Cheers.) It had been recently stated by Lord Stanley, that, on the Earl of Derby's estates, drainage to the extent of 300 miles *had been* effected, for which a per centage *of £5 was charged* on the tenant. Now he *thought that* was just and equitable, and ought not to be objected to by th
piers. He had no hesitation in say
in many, perhaps in most, cases, f
£100 laid out in drainage by the l
there was a return of £10 to the t
He would say, that for what he dr
would charge no more than legal i
and be happy to see the remainde
pockets of his tenants. (Cheers.)
own farm he had made a variety of
ments with manures, and from wha
seen of the results of guano, he c
speak in too high terms of it. Th
vian guano, which was much bet
the African, might be had for £10
and when they considered that an
land might be thus manured for l
£2, taking about three cwt. to t
without risk of the injury done to
by dragging carts over it, its ad
must be apparent; and he belie
successive green crops would be
good as if the land had been man
farm yard manure. Mr. Mostyn
ferred to the practice of the early
of wheat, which his father and ot
tlemen had formerly objected to,
that it would run up into the str
experiments which he had ma
wheat sown on or about the 25th
had proved that these opinions
foundation in reality. He thoug
sheep might be introduced more g
with advantage, and many of th
in Caerwys, Cilcen, and several oth
might be thus brought to greater pe
However much he was satisfied t
improvements that had been int
into their county, in the practice
culture generally, he could not b
that there was no corresponding
in the introduction of sheep, and
this opportunity of calling attenti
fact, in the hope that a remedy
applied with as little delay as p
(Hear, hear.)

Mr. **Carter** said he would offer
or two on the stock that had co

ice, and he certainly could not say
Mr. Mostyn, that what he had seen
nswered his expectations. He ex-
to have seen better stock as a whole,
the same time he should remark
here was great merit in the young
This ought to encourage them, for
l no doubt that by judicious crosses,
valuable breed might be raised up.
l so far been speaking of short horned
and if it might not appear presump-
n a stranger, he would respectfully
t that a premium should be offered
tle reared on the high lands, distinct
at offered to those from more favour-
ots, because it must be evident that
mpetition between them the former
f cattle would be nowhere. He cor-
greed with the commendations Mr.
had lavished on guano, for he had
f proved it to be a very valuable
. Bones did not appear to be much
Wales, but he might inform them
eir effect on the clay lands of Che-
reviously drained, was astonishing;
knew instances where, by their ju-
application, farmers were enabled
p fifty per cent. more stock. He
to say a word or two on the proper
tion of liquid manures. He certainly
t that on a well conducted farm
nanure would be carefully preserved.
ould be floated in its natural state
land, well; but if it could be mixed
e water from the buildings, or any
of water, it would be better still.
was not practicable he would recom-
tank to be made; and there was
a very peculiar construction on the
f Mr. Wild, of Weaverham Wood,
as one of the best agriculturists in
nty of Chester. It was constructed
side slip, into which were thrown all
cases that might happen to be about
m. The carcases were decomposed
application of lime, the fluids flowing
e tank; *and when the tank was let*
bones were taken out and used as manure. It was advisable also to run the liquid from the tank on a wet day lest its strength should be injurious to the land.

Mr. MOSTYN alluded to the experiments made by his father with lime, together with the adoption of the drainage system, six yards apart, and said that he had no doubt the increase of produce would well remunerate him for his outlay. He strongly recommended the erection of tanks for their liquid manures, having himself had sufficient proof of the advantage. One which he had erected at an expense of only £12, had been found exceeding useful. He urged the necessity of collecting all the manure they could, either for distribution or grass land, or to be laid up on the dunghill.

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ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A WEEKLY Council was held at the Society's House, in Hanover Square, on the 20th of Nov., present, Thomas Raymond Barker, Esq., in the chair.

Lectures.—Communications were received from the Duke of Richmond and Mr. Pusey M.P., announcing the progress of the arrangements for lectures to be delivered before the members at their ensuing Christmas meeting, in the second week of December, when the rooms of the Society would be thrown open in the evening, as formerly, for their accommodation, and the General Meeting held as usual on the Saturday of the same week.

Belgian Carrots and Wheat.—Mr. Mechi, of Leadenhall-street, favoured the Council with samples of the Belgian Carrot grown on his property in Essex, accompanied with the following communication in reference to their cultivation, and that of the wheat, of which he had sent specimens for their inspection on a former occasion:—

"I send a few carrots of my Tiptree growth. They are the produce of a black sandy field (nine acres), forked twelve inches under the plough, and dressed with dried night-soil (which, however, I consider much inferior to guano, so far as I have compared them.) They were several times hoed with a deep bean-hoe. I consider the removal of their lateral fibres obliges the tap-root to go down in search of moisture and food; the same remark applies to Swedes. Had the season been an ordinary one, I should have had an enormous crop of carrots; but they struggled hard with 14 weeks' drought, and only then came to one-half or three-quarters of a plant. We filled up the blanks with Swedes. Still they will afford useful feed. Forty acres of my wheat (specimens of which I sent you) averaged over four quarters per acre; weighing 64 to 66lbs. per bushel (one field produced 5 qrs. 1 bushel.) The two fields of March-sown wheats failed, owing to the drought (so many green ears unripe); only two qrs. per acre of middling quality.—*J. J. Mechi.* 4, *Leadenhall-street*, *Nov.* 16, 1844."

The Council ordered their thanks to be returned to Mr. Mechi for the favour of this inspection and communication; and, on the motion of Mr. Shelley, it was resolved, that inquiry should be made of Mr. Mechi, whether the four Belgian carrots he had sent to the Council were fair specimens of the average crop of the nine-acre field referred to in his communication; and also the amount of tail and head wheat, and off how much land grown.

Socket Drain-pipes.—Mr. Henry Dixon, of Witham, in Essex, favoured the Society with specimens of the socket drain-pipes made by him for the use of his own land; and which he informed the Council were particularly applicable to loose spongy soils, and from their construction could not fail to be safe. He had found that it was not necessary, as some had supposed, to have the pipes made with holes in their sides. The pipes in question might be made of any length; the most convenient one having been found by Mr. Dixon to be from 15 to 18 inches; and the cost of the socketing as effected by Mr. Ford's patent machine which he employed, and from 2s. 6d. to 3s. 6d. per 1000. Mr. Dixon enclosed with the pipes a curious evidence of the facility with which the roots of trees will destroy drains if carelessly placed: it consisted of the cylindric mass of fibres from the roots of a willow tree growing about five or six feet from a drain which had been put down only twelve months, the pipe from which the fibrous collection was taken having been a four-inch socketed one. Thanks were ordered to Mr. Dixon for the favour of these specimens and the communication which accompanied them.

Mr. Fisher Hobbs, fully corrobora statement then transmitted to them Dixon, whom he well knew as a lan to a considerable extent in his own bourhood, and as a disinterested pr of agricultural improvement. An i ing discussion then ensued, in whi Hobbs, Mr. Shelley, and Mr. D voured the Council with the results own experience in reference to th mulation of large masses of water su formed under peculiar local circum of surface in the case of continued rai

Horticulture, &c.

Scotch Leadington Apple.—I h my garden an apple-tree called in this the country, the Scotch Leadington, has borne, the year before last an year, so large a quantity of fruit think it worthy of attention. In th 1842 it had upon it, carefully measu bushels, each bushel averaging 420 making the enormous quantity of apples. Last year it had a very de crop, but this year it had 8,864 ap *H. L. M.*, *Witham.*

Cormack's British Queen Pea, for neral crop, is superior to all others. mack's Prince Albert Pea is the ea and may be gathered on the 8th of M

Gooseberries.—The following are of the best early and late varieties:- Champagne (Keen's), Seedling Warri Red Warrington, Leigh's Rifleman, ling's Crown Bob, Red Turkey, Red, Yellow Champagne, Early Sul Rumbullion, Glenton Green, Pitm Green Gage, Massey's Heart of Woodward's Whitesmith, Taylor's Venus, Early Green Hairy, Rob Knight's Large Red Currant is a prefe variety.

Pears for Walls.—For a north as plant Marie Louise, Jargonelle, H Incomparable, and Bezi d'Heri, the for stewing. For east or west asp Glout Morceau, Passe Colmar, Winte lis, Hacon's Incomparable, Beurré and Gansel's Bergamot.

MPBELL'S CORN STEEPS.—We have in ssession numerous testimonials of the cy of these preparations, both from rs and proprietors of the highest res- bility. They exhibit details of ex- ents on a great variety of soils, and diversified circumstances of climate ulture, and lead directly to the con- n that there is much virtue in the ss of soaking grain in certain chemical ons previous to sowing. The past n no doubt has been, on account of its ne drought, unfavourable to the full pement of their beneficial results, his, together with the carelessness ismanagement of various parties who the trial, has contributed to produce in several instances; but we believe nany, that only a more favourable as to moistore, and a little more ex- ce in the operation, are all that is l to ensure complete success.—*Dundee r.*

Reviews, &c.

inciples of Agriculture, by Albert D. r. Translated by William Shaw Cuthbert W. Johnson, Esqrs. Lon- Ridgway.

ssrs. Shaw and Johnson, who may inaptly termed the Siamese twins ultural literature, had never before jointly the thanks of the British , they have most assuredly done so y their spirited translation of this ant work. Dr. Von Thaër (like and Sprengel) was a physician of minence, who, with an enthusiasm and perfectly German, turned his n to the various productions of the d the means of increasing those ions; his chemical education had n not to be satisfied with mere re- e was not one to sit down quietly e moral certainty that causes pro- fects, he was anxious to know why in course of action *brought about* certain events, and to trace up every effect to its parent cause. A determiation of this kind, carried out with zeal and discrimination, led naturally to the establishment of *principles* which the learned Dr. has set before us in an exceedingly intelligible form, and which our translators have, we verily believe, done ample justice to.

The Dr. gives the following advice to the young farmer, which may be taken as a fair sample of the style and general character of the work:—

"The attention of the young agriculturist having been directed to a particular spot of ground, he must make a satisfactory estimate of its value, by applying to it certain general and invariable principles. Afterwards he must study and duly estimate all the necessary circumstances; he must put a determinate value on the peculiar advantages which may exist independent of the soil; he must value each, on as exact an estimate as possible. On the other hand, all the inconveniences which are attached to the domain must be considered in every point of view, and the difficulties which will present themselves in every great agricultural enterprise. These must also be estimated, and the sum total found. Then, by deducting one sum from the other, it will be seen how far the actual value of the land, according to its extent and to the quality of the soil, is augmented or diminished by these accessory circumstances.

"While money continues to experience so many changes in value, it will constitute a very uncertain guide in determining the positive value of the soil. A much more certain and stable guide, and one of universal application, will be found in the produce; which, because it is of universal consumption, always maintains a uniform and permanent relation with every other commodity. This produce is *the grain;* in Germany principally the rye, and in France the wheat. Thus, in order to determine the precise value of a farm, it will be much more correct to say that it is worth so many measures of rye and wheat, than so many pounds or shillings. Or if we wish to reduce this fixed value to a numerical one, which may be modified by circumstances, we must ascertain the medium value of wheat with money in ordinary years; and thus we shall be able easily to calculate the sum that a portion of landed property is worth, according to the actual value of money.

"The value of a farm consists: 1. In the extent of the whole and of each of its divisions. —2. In the quality of the soil. This latter quality can only, properly speaking, be demonstrated in a precise manner, by an analysis of the different substances of which it is composed, and of their physical properties; this, however, may perhaps be done provisionally, or to a tolerably satisfactory extent, by careful observation of the appearance and of the produce of the soil. 3. In the situation, and in the reciprocal relations of its appurtenances. 4. In the exterior circumstances, the prerogatives, the rights, and the charges of the property: or, in fact, in all its accessory and relative advantages and disadvantages.

"In the general examination of the land, the growth of the trees and copses, if there be any on the land, their species, their soundness, the elevation of their branches, and the cleanness of their bark, are among the surest marks of the quality of the soil. The plants which grow spontaneously there, even those that are injurious, afford also a valuable indication; but it is not sufficient that they grow isolated and slowly, but, on the contrary, their increase should be rapid and abundant. Thus the corn or *field thistle (serratula arvensis,)* indicates a rich and productive soil; the butter-bur or great petasites *(tussilago petasites,)* an argillaceous soil; the colt's foot *(tussilago farfara,)* and the bramble, a marly soil; the common chickweed and pimpernel *(alsine media,)* the common sow thistle *(sonchus oleraceus,)* the charlock *(sinapis arvensis,)* grow on soft and tenacious lands; while the wild radish *(raphanus raphanistrum,)* grows in dry and poor lands. The black medick or nonsuch *(medicago lupulina)* is a sure sign of the marly quality of the soil in which it is found.

"An abundant growth of grass, by which persons who value estates often suffer themselves to be too much influenced, is a very deceptive indication, as it is often occasioned by a humid atmosphere or by recent manuring, and sometimes even by the bad state of the cultivation.

"The appearance of the crops in an early stage is a no less deceptive sign; for, when they are sown thickly, and in the early part of autumn or in the spring, on a bad soil, they may appear, on a superficial inspection, to be superior to those which grow on a better soil. Sometimes, indeed, the corn is sown in a much greater quantity than it ought to be, for the purpose of deceiving the unwary purchaser.

"A far more correct judgment of the quality of the soil may be formed by examining the corn in the ear, or the stubble, provided the examination extends to the whole of the farm, and is not confined to one particular field, on which, perhaps, an abundant crop has been produced by extravagant manuring, or by some extraordinary mode of culture which has, perhaps, caused the neglect of some other fields of th farm.

"A dark colour of the soil after recent ploughing is one of the surest signs of fertility, except in heaths and marshy lands. A dark colour of the waters in the furrows and of the deposits taken from them is, likewise, an indication of a rich soil.

"Practice will soon distinguish by pressu of the foot, or by thrusting a stick into the soil, or even by the sensation which is experienced in passing over the ground on horseback, the degree of tenacity in the soil; whether it consists of tenacious clay, or if it be a yielding soil, or whether sand be the principal ingredie We may also readily judge of the quality by t state of the clods after recent ploughing, from noticing the degree of divisibility or te city when they have been some time exposed the influence of the atmosphere; but more p ticularly the proportions of the soft clay to gravel may be easily ascertained by rubbing portion of the mould between the fingers.

"The thickness of the layer of veget mould may be easily ascertained by thrusti stick into it, or by examining the sides of ditc where the ground has been lowered. Th last, and also mole hills, discover the nature the lower strata of the soil.

"The scientific agriculturist, who posse the most precise and accurate ideas of the cl ification and goodness of the land, and who derstands the different relations according which it should be examined, ought not less to be acquainted with their ordinary cl fication, and with the names by which prac men are in the habit of ranging and disting ing them, whether generally, or in partic districts, in order that he may not be at a l when he is treating for the purchase of prop of this description.

"The division of land into good, middl and bad, is general and natural; but it is pu relative.

"Tenacious clay has been often ranked in first class; and a lighter soil, and even calcar earth, in the second. Other persons have g the preference, and very justly, to the l because, in the cultivation which is assoc with pasturage, more regard is paid to the which best promotes the spontaneous growth the herbage; while in the former the growth corn is the only object regarded.

"Sometimes a signification similar to above is given to the comparative expres *heavier* and *lighter;* but these terms are merely used to denote the tenacity of the and the degree of resistance which it offe the plough and the harrow.

"Sometimes the land is classed according to the number of times the seed is multiplied by vegetation in the course of tillage followed in that part of the country; and thus it is called 3, 4, 5, or 6 seed land. Sometimes the seed itself is included in this calculation; at other times it is necessary to become acquainted with the relative quantity of seed that is sown, and whether equal quantities are sown on equal areas of different lands, in order to be able to draw some conclusion from these data; but the produce generally depends more on the quantity of the manure than on the nature of the soil.

"One of the most useful modes of classification relates to the description of grain which the land has produced in the course of the established succession of crops, and that generally, in a period of three years; and likewise to those which it is supposed to be able to produce with the greatest advantage. The following is the classification usually adopted in Germany:—

"1. *Wheat land;* that which after a fallow produces wheat with more profit than rye. If, in the course of the triennial rotation, it can bear wheat twice in six years without being manured more than once, it is called—

"(*a.*) *Rich wheat land;* which is found only places of alluvial deposits and in low situations, where the rivers have deposited the mud.

"(*b.*) *Ordinary wheat land,* if it can produce wheat only after having been manured, and after having lain fallow; and the second time, without manuring, rye only.

"2. *Barley land.* In this and the following class no attention is paid to the first or winter crop, but only to the second or spring crop. There are also distinguished—

"(*a.*) *Rich barley land;* that which twice in six years produces barley after the winter crop, with only one manuring. Many persons, believing that land of this nature can produce wheat equally well for the first crop, include it the same class with the wheat land. Others, with more reason, draw this distinction, that a soil is often exceedingly well adapted for the production of barley without being well suited to the growth of wheat, and will often bear rye with more advantage. On the contrary, an argillaceous soil, which is better adapted for wheat than for rye, is not so proper for barley, and will, with much greater advantage, be cropped with oats for some one of the second crops.

"(*b.*) *Poor barley land;* land in which barley will not thrive as a second crop without manure, but which, in the second rotation of crops, may be made to produce oats, though not very abundantly.

"Where the large and the small kinds of barley are both cultivated, the lands which produce the first are called *large barley lands;* and the others, the *small barley lands.*

"3. *Oat land* is that which produces oats after the harvest of the winter grain. Strictly speaking, only cold and heavy land may be included in this class; and every other soil which yields oats with advantage might, with good tillage, be made to produce barley with equal profit. In general, however, we include under this class lands which are considered too light, or which have too little consistence for the growth of barley. This class includes—

"(*a.*) *Rich oat land,* which, with only one manuring in nine years, yields oats after each winter crop, and, therefore, three times during each succession of crops.

"(*b.*) *Middling oat land,* which is allowed to lie fallow the eighth year after it has been manured.

"(*c.*) *Poor oat land,* which, under the same circumstances, yields but one crop of oats.

4. *Rye land,* which, in the three years' succession of crops, produces rye every third year only, and which has not sufficient strength to produce another kind of grain, and consequently, must lie fallow for two years."

The improvement now becoming so general in this country upon all suitable and well drained soils of converting to arable and bringing into the regular course of tillage the old pasture and meadow lands, farmers depending for their fodder upon the proper cultivation of artificial grasses, was advocated by Dr. Thaër. Alluding to the valuation of a farm, and considering the necessity of meadows, our author says:

"Next to the arable portion of the farms, the meadow land should come into serious consideration. A due proportion of meadow and arable land has hitherto been considered as an essential requisite in a good farm; and that a quantity of land, although composed of the richest and best soil, would be defective if it was not accompanied by a sufficient extent of meadow ground. This opinion is founded on the acknowledged fact that without a sufficient supply of green food no good tillage can exist; and also on the acknowledged axiom, that without meadows there can be no forage. Yet, when it shall come to be generally known that by cultivating the various grasses, and by alternately using the different portions of the land as arable land and as artificial meadows, three or four times as much nourishment can be obtained for the cattle as on the same extent of natural meadows, the deficiency of natural meadow land will no longer be regarded as a defect in an estate, the soil of which is tolerably fertile, and in which the rotation of crops is at the disposal of the farmer.* Nevertheless, this circumstance ought only to be considered as placing some limits to the supposed value of good meadow."

Some of Von Thaër's dogmas are sufficiently amusing, for instance "*The golden alphabet of the farmers who have placed themselves above the laws of duty and honesty,*" and the following :—

> "That which does not improve, will certainly degenerate; it is, therefore, very seldom that a farmer does not leave an estate in a worse condition than when he took possession of it."

Upon which latter the translators have, by way of still further augmenting the debt of gratitude owing them by the English farmers, the following note :—

> "The editors feel that happily for the character of the great mass of the farmers of England, these remarks do not apply to *them.*"

We feel that happily for the landowners of Scotland the following is not of general application :—

> "In those states," observes Von Thaër, "in which the lands have been let to the highest bidder, without regard to his personal character, and a higher rent obtained in consequence, all the contracts, all the clauses introduced into leases, and all the restrictions to which the tenants have been subjected, have not been sufficient to preserve the land from serious deterioration, and, in spite of the continuance of the high price of corn, occasions a considerable diminution of rent as well as of produce."

The large farm system of Scotland, to the everlasting honour of the farmers of that country be it spoken, is an exception to this rule. English agriculturists have for some time decried the system precisly upon the grounds taken by our author, yet letting farms by auction continues to prevail in Scotland, and no greater proof than the continuance of the system can be adduced that it has not the effect of "serious deterioration;" if it had, landlords would no longer let by that method, for we cannot bring ourselves to believe that the trifling advance in the rent obtainable by this means, can at all counterbalance the positive loss by 'serious deterioration,' if it really takes place. We must here conclude our present notice of this work, which may be consulted by either amateur or practical farmer with advantage, as it treats upon almost every branch of farming in the most satisfactory manner. It is, indeed, a valuable addition to our agricultural literature.

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The Economy of Waste Manures, a Treati on the nature and use of neglected Ferti sers; by John Hannam. London, Long man, Brown, & Co. *(Second notice.)*

We recur with great pleasure to Mr. Ha nam's volume.

Of the liquid manures we enumerated i our last, and others mentioned by our a thor, he quotes many highly interesti experiments, of which we mark the follo ing for extract :—

> Mr. Harley (in the *Dairy System*) speaks the success of the application of cow-hou drainage, by an engine, to his lands ;—the gr having to be mown five times each year, a each crop, though short, being a good produ and so rich that it would rot unless mown o *a month after April.* Sir John Sinclair, h states, visited one of these fields which h been mown *sixteen times in three years.*
>
> The same authority cites equally succes results from the use of soap liquid and urine t five acres of strawberries, and other garden plo
>
> At the council dinner, at the Yorkshire Ag cultural Society's last meeting, it was stated b Mr. Beaumont, that he had raised seven lo of wheat per acre, by an application of liqu manure, when, in the same field, a portion u manured gave only three loads per acre.
>
> One or two cases have also come within my own observation during the past and pres year.
>
> By the application, in 1842, of gypsum 2 cw per acre, saturated with 32 gallons of *putri urine* to 12 bushels of bones, I increased th turnip crop 2 tons, 7 cwts, 6 sts. Gypsum only

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*The author steers a middle course in opinion between arable and meadow lands in point of utility. He thinks a knowledge of the alternate system ought to set a limit to natural meadows, but not to annihilate the value; or rather the supposed value. That system will require much time to force its way even with enlightened *minds.—Translators' note.*

(2 cwt.) used with 12 bushells of bones, gave only an increase of 1 ton 6 cwt. 2 sts. The following are the gross results of the experiment:

	Tons.	cwts.	sts.
Bones, 12 bushels per acre	23	6	4
Do. and Gypsum, 2 cwt. per acre	24	12	6
Do. Do. and Urine, 32 gall. per acre	25	14	2

During the present year, too, the addition of 100 gallons of urine, per acre, to flax waste, (a dry egetable matter somewhat like chaff,) has oubled the crop of turnips. The following are e results:—

	Tons.	cwts.	sts.
ax Waste, 50 stones per acre ...	3	5	3
o. saturated with 100 gals. of Urine	8	10	5

e soil boing poor, and the action of the flax slow, both are bad crops. The effect of the all quantity of urine, however, is striking.

The application of the *house liquid* has had, o, with me, during the present summer, a y visible and beneficial effect on the grass of ture-land, the cattle invariably frequenting portions dressed with the liquid. On a pas-e-field in the occupation of Mr. T. Hannam, o, the very *dilute drainings from the straw* l have improved both quantity and quality herbage greatly. They have been very libe-ly applied, however, for the last two years.

By the addition of the waste liquid from the use and offices, to all sorts of vegetable refuse, eds, stick-heaps, hedge-bottoms, &c., we de, during last winter, manure for two acres turnips. They are at this time a most ex-lent crop.

We are glad to see Mr. H. call attention the loss of *gaseous manure*. This loss, we ve long been of opinion, surpasses even at of liquid manures. Gaseous manure not so easily made available as that which presented to us in a liquid state, the great fficulty being to *fix* it, and so retain it d make it subservient to our purposes. escapes not only from our heaps of solid anures, but from every receptacle for quids; and escapes, too, more or less pidly according to the richness of the anures, the most valuable and powerful anures ever experiencing the greatest loss.

After quoting many writers, whose ob-rvations and experiments tend, in addi-on to his own, to convince Mr. H. and ubtless his readers, that much more ma-re may be manufactured upon every farm than is at present done—he proceeds to enquire:—

First,—Upon what *principle* should our systems of economy be based?

Second,—How far the methods detailed are designed to carry out *this* principle.

First,—The principles which are advocated, as those to be had in view in making arrangements for the purpose of preventing a waste of farm manure, are of very opposite characters. Thus, on the one hand, we are urged to extract *as much of the liquid from the solid manure as possible, and to use them separately*; and on the other, *to saturate the solid manure as much as possible with the liquid, and to apply them conjointly.*

All the plans which have yet been proposed, are designed to put in practice one or both of these principles. By the advocates of the former principle it is urged that, as all food of plants enters into their system in the fluid form, liquid acts more readily alone than when combined with the solid matters in compost,—that, if applied to light sandy soil it improves its mechanical condition, so that instead of being porous and of loose texture, it becomes firm and retains its moisture as long as a clay loam, —that, by diluting it with water, the escape of ammonia into the atmosphere is prevented,— and that it is a valuable spring top dressing. For the compost principle it is urged that, if manure acts more slowly in the compost than the liquid form, it acts longer,—that, in such form it improves the texture of *heavy soils*, rendering them more porous and accessible to atmospheric action—that, upon many soils liquid, as a top-dressing cannot be carted without evil to the crop,—that, in the liquid form there is a greater escape of ammonia than in the compost, unless the former be largely diluted with water* —that, if so diluted, the liquid costs great labour in carriage,—that, if combined with the solid matters, it is applied with scarcely any extra trouble,—that, a well saturated compost supplies a crop with ready food, and continues also to supply it to the end,— that, as the chief value of farm manure arises from the fact of its containing *so many* of the elements of nutrition, if we separate the liquid from the solid, we render both less calculated to supply *all* the wants of vegetation, and both less valuable,—that, as both are less valuable, more of each has to be applied to the crops, and hence arises an increase of carriage,—and lastly, that, by the aid of the liquid, we can promote the decomposition of vegetable matter, and can form valuable manures with sawdust, couch-grass, and matters which would otherwise be of little use.

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* "Whoever," says Dr. Sprengel, "is obliged for want of straw to collect the urine separately, —whoever, if he be compelled to do this, mixes no water with it, or who fails to employ some neutralizing substance to combine with the ammonia which is produced in so great a degree during the summer, suffers a loss of manure which exceeds all belief."

From the above arguments it is evident that, as there are refuse vegetable matters on *all* farms which should be converted into manure, the system of using the liquid manures separately should *in no case be exclusively adopted*,—that, as in some peculiarly light soils liquid manure is especially valuable, it may *in some cases be used separately*,—that, except in such instances—as it is of such essential value in the formation of manure from the refuse matter, and is equally essential in converting straw into manure, and as its separate use is attended with extra trouble and cost—such use should only be made of it when there is *a deficiency of straw, &c., from which to make compost.*

English farms, however, are generally plentifully supplied with straw; and unless it, and all other vegetable remains, be converted into *good manure* and *returned* to the soil, the production of grain can not be kept up. Hence, then, the principle which should direct our economy of liquid manure is *to combine it as far as possible with the solid matters which we possess*, and to employ the remainder in the liquid form, upon such soils and crops as may require it.

In preserving the *vegetable refuse*, and in preventing *gaseous* loss of manure, we must endeavour to carry into effect the same principle;—viz., *to concentrate in our manure heap all the fertilizing properties that we are able.*

Second,—How far the various methods, detailed in the preceding pages, are calculated to work out this principle is now for enquiry. In the first place, it will be seen that the Flemish method is based on the principle of applying the liquid separately, and is, therefore, not adapted for the English farmer. It is, however, the fact, that the Flemings themselves use it in compost with the refuse matters of the farm; and it is not unfair to assume, therefore, that if they had the straw and fodder which we have, they would use it in compost still more; as it is of equal consequence that one sort of vegetable matter which does not undergo mastication, and the other which does, should be impregnated with the urea and ammonical salts of the liquid. At the same time, even in England, the Flemish method may be of great use to the mere cow-keeper, grass farmer, or the cultivator of peculiarly sandy soils.

The methods used by the Chinese, and those *proposed* by Mr. Dixon and Mr. Colman, in as
much as they contemplate the mixtu
liquid with the solid manure, are in a
with the principle we advocate; at
time, they are utterly inefficient as *s*
which the waste of manure may be
They do not err *in opposition* to the p
compost making, as is the case with t
ings; at the same time, they do not s
more than the Flemish method doe
latter method provides for the econom
waste vegetable refuse, as well as t
And, again; though these methods do
the Flemish, *exhaust* the farm man
liquid, they certainly rob the straw-fol
rich urine of the stall-fed cattle, whi
quires. Compost, it is true, is forme
pit, but this compost might *as well*
after the urine has passed through the
the fold. But, even supposing that t
lent quality of the compost thus made
balances the deficiency of the straw-fol
the methods are still inadequate to
proper economy of the manure of an
farm; for though they afford us the
making the compost, the preservation
uncared for; while both *preparation a*
vation of the great bulk of the ma
straw-yard compost—so as to preve
liquid or gaseous waste, is completely

Of the various plans which we ha
ined, Mr. Thompson's is, however, mos
to our notice. And this, not merely b
is in practical operation, and has she
ficial results of which we have abun
dence, but because it is calculated t
each of the advantages flowing from
methods, without their disadvantages.
stance, it affords us the means, not onl
lecting the waste fertilizers, but also o
ving them, and of using them in co
with the principle best adapted to Eng
culture;—viz., *that of concentrating th*
as possible in our farm-yard compost, or
them singly, at option.

In the *modus operandi* of this plan,
it is true, certain defects; they do not,
belong to the system, but are errors of
ment, and, as such, may be remedied.
these errors is in the position and local
liquid manure tank, which is at some
from the compost pit. Owing to this
stance, the solid manure is only *satura*
the liquid that it brings with it from
except at the expense of extra cartage
tank. In cases, therefore, when the
from the pit are not sufficient to moi
compost, (a circumstance which Mr T
states does happen,) or when we may
quantity of dry vegetable matter, whic
of decomposition, to form into compost,

ke the trouble of frequently carrying
d from the tank to the pit, or (what
qually troublesome, and must be always
ictice, when the liquid from the yard
ay means be obtained) adopt Mr. T's
rnative, and "*use plain water.*"

the tank formed near the pit, this evil
removed; the drainings from the fold-
uld be quite sufficient for saturating
ost, and the work would be perform-
little trouble. It may be said that
can be done *without trouble*, and that
ge of the liquid would be amply repaid
se. This may be true, but let it not be
, that, strictly speaking, if we are ever
munerated for spending a week over
, we are much better paid if, by any
e can perform it in half the time. But
n this account that unnecessary trou-
bjectionable in a plan like this, but
se *it often leads to more serious evils.*
we have a compost requiring frequent
ns of the liquid—and it is a work de-
a little extra preparation—it is perhaps
shed once properly; next time, how-
ay happen that we are busy, and it is
ver, and only half done; on the next
perhaps, time cannot be found to at-
do it; and so on, till at last it is for-
together. We do not say that this
a common case; when, however, we
sily prevent the probability of it hap-
all, it is our duty so to do.

now seen upon what principle our
economy should be based, and how
arious measures proposed are calcu-
arry out that principle, we are in a
to say how, and by what particular
at object may be generally effected,
aste manure of every farm properly
ed. To accomplish this thoroughly,
re an arrangement more comprehen-
any yet detailed. A careful examina-
ever, of the advantages and disadvan-
the preceding plans, warrants us in
that it may be done, both effectually
mically, by attending to the following
ns:—

t all the buildings round the farm-yard
folds be spouted, and the delivering
rranged that the water may be made
to the yard or not, at the option of the
This may be effected by bringing the
e spout over a drain, which may be
or closed, as he may wish the water to
m the yard or not.

t the farm-yard, if possible, be made
oncave, so that the liquid may perme-
ss, and make to the centre.

3.—Make drains from every stable, cowshed, &c. and from the kitchen into the manure yard.

4.—Select a shady place, if possible on the north side of a hedge or wall, where it is convenient to cart the manure to, when it is removed during winter and spring from the fold. Mark out a surface sufficiently large to hold in a heap all the manure made during winter, and form a compost couch of this size, and two feet deep. Divide this couch into three sections, by two rows of flags or bricks. Make the bottom of each couch incline, so that liquid from the manure may gradually fall to the front side.

5.—Next cut a drain along side, and in front of the couch, with an inlet from each division, through which the liquid may flow into the drain, and fix a sluice at each inlet.

6.—Make a capacious tank, on any convenient side of the couch, and connect it with the drain which runs along side the couch, so that the liquid from the couch may run into the tank.

7.—Make a drain from the bottom of the farm-yard into the tank, and fix a sluice, so that the liquid from the yard may be let into the tank or not, at pleasure.

8.—Fix a pump over the tank, and connect the nozzle with a wooden spout, placed so as to traverse above each division of the couch.

9.—Bore a hole through the spout over each section of the couch; in each hole put a plug, on the topside of the spout. Also, over each hole, affix on the under side of the spout a leathern nozzle or delivering tube, two or three feet long; by means of which arrangements, the liquid from the tank may be directed to any part of the couch.

These arrangements may be made at a slight expense, in almost any locality, and worked with little trouble by the farmer, so as to give him a perfect command over his manure; that is, to enable him not only *to preserve the fertilizers which are usually wasted, and to concentrate them in the form of compost or otherwise, at pleasure;* but also to *make and preserve* this compost for *any length of time* in *whatever condition we may think fit.*

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The Veterinarian, November. Longman and Co., London.

There are several very useful papers in the late No. of the *Veterinarian.* Amongst them is an "Address to Students," taken from the pages of the *Lancet*, in which the editor of that very useful publication urges upon the attention of youth the importance of husbanding their time and their health at the same time; and though addressed to medical students in particular, any young man seeking to open out for himself a path through life which shall lead to distinction, in any professional pursuit, must be forcibly struck with, and will doubtlessly profit much by an attentive perusal of this paper, which the editor of the *Veterinarian* has, with much kind consideration and good sense, transferred to his columns.

Mr. Karkeek contributes a continuation of his excellent "Essay on Fat and Muscle," which we continue from the October number :—

"There are two causes which chiefly contribute to increase the consumption of oxygen gas; these are TEMPERATURE and EXERCISE. We will proceed to consider the effect of these in the living organism by a few examples from the farmer's every-day practice. In the winter the air is more condensed than in the summer, consequently the same volume of air in the winter contains a larger per centage of oxygen than in warm weather, when it is more rarified. It is for this reason that a larger supply of food is consumed by persons living in cold countries than by those who are inhabitants of hot climates. We thus percieve an explanation of the apparently anomalous habits of different nations. The maccaroni of the Italian and the train-oil of the Greenlanders are not adventitious freaks of taste, but necessary articles fitted to administer to their comforts in the different climates in which they have been born.

"*Example No.* 1.—A flock of Leicester sheep
on tolerably good food will increase in weig
throughout the year about 52 lbs. of mutto
each sheep; but this accumulation take
chiefly during the spring and summer
for, during the cold [illegible] it requir
farmer's supplies [illegible] keep [illegible]
same weight. S[illegible]
tense, and the [illegible]
in the form of [illegible]
fat which th[illegible]
in the mild [illegible]
keep up th[illegible]
"*Exa*[illegible]

folded by divisions of pens, each of
22 feet in length by 10 feet in breadth
sessed a covered shed attached to i
were kept there from the 10th of Octo
10th of March. Each sheep consun
average 20 lbs. of swedes daily. Ano
dred were folded in similar pens, bu
sheds, during the same time, and t
consumption of swedes amounted to 25
The sequel was, that those sheep whic
the protection of the covered sheds had
3 lbs. each more than those which wer
protected, although the latter had
one-fifth more food.'

"*Example No.* 3.—In the mountai
tricts of Scotland, the necessity of
shelter for sheep has long been acknow
for, when the stormy season sets in,
necessity of feeding the sheep with h
morning and evening, the quantity of t
necessary being generally proportion
degree of cold.

Rest also, as well as the necessary p
from cold, is an equivalent for food.
sumption of oxygen in a given time
expressed by the number of respiratio
therefore, obvious that in the same an
quantity of nourishment required m
with the force and number of respirati
as the number of respirations is fewer i
of *rest* than during labour or exercise, t
tity of food necessary in both instances
in the same ratio. This can also be ex
by the farmer's daily practice, since h
aware that the quieter an animal is ke
[illegible]ding, the [illegible] fattens.
[illegible] is uniformly fo
[illegible]ummer will yiel
[illegible]nd milk than o
[illegible]er supply of foo
[illegible]bsence of oxygen
[illegible] la[illegible]ount
[illegible]ing
[illegible] confi
[illegible]arrow
The ca
[illegible]doorway, j

ugh to allow the head of the animal to be ıst out: as soon as he is fed, the opening is ed, and the animal is kept in total darkness. this manner it is found that calves get fat in onsiderably shorter period than if allowed to ve freely in an open stall.

' *Example No.* 3.—In the suckling of house-ıbs of the early Dorsetshire breed for the ndon markets, the dams are fed with hay, -cake, and cabbage in an enclosure adjoining apartments where the lambs are confined. e lambs are excluded from the light, except the intervals when the shepherd suckles them on the ewes. Some feeders confine their nbs in narrow separate stalls to prevent them m playing with one another; but others m the exclusion of light and the absence of tion and noise the best for this purpose. By e means they speedily fatten, and their flesh omes exceedingly white and delicate.

" This brings us to that very important part our Essay, the PRODUCTION OF FAT. We ve seen, from the examples just adduced, that der certain circumstances, viz., the absence exercise and cold, and the presence of a oper supply of food, herbivorous animals edily become fat. By reference to the table ntaining the relative proportions of nutritious tter in the ordinary cultivated crops of the mer, it will be seen that the proportion of ef-suet which exists in wheat or barley or aw and turnips, is exceedingly small; indeed, e turnip does not contain any, and yet animals der such a diet will speedily fatten. The fat, en, is the product of a peculiar digestive pro- [illegible] unazotised constituents of the food, [illegible] d in consequence of a want of due [illegible] tween the food taken into the sto- [illegible] oxygen absorbed by the skin and [illegible] chief source of fat is starch and [illegible] comp [illegible] such, that if de- [illegible] ygen [illegible] 'Thus, if from [illegible], H [illegible] ake 9 at oxygen, [illegible] l, which is one of [illegible] t.' It is obvious [illegible] is the right one, [illegible] med by a process [illegible] fat as an abnormal condition, since wild animals, such as the hare, the roe, and the deer, never produce any—the exercise which they continually undergo preventing its formation. Besides this, they never eat except when hunger requires it, while the sheep and the ox eat almost without intermission, and, when young, they convert into fat and organized tissue all the nutritious parts of their food beyond the quantity required for supplying the respiratory process and the waste of the system; so that they soon become plump and fleshy.

" Want of exercise, then, and diminished cooling are equivalent to a deficient supply of oxygen, for when these circumstances occur, the animal absorbs much less oxygen than is required to convert into carbonic acid the carbon of the substances destined for that purpose. We have a beautiful example of this in the " conditioning of the hunter," which consists in giving such exercise and food as will, without reducing the strength of the animal, prevent the formation of superfluous flesh and fat. *Air, exercise,* and a proper supply of nitrogenised food, such as oats, peas, beans, &c. contain the grand secret in the art of training. But these articles also contain a large proportion of starch and fatty matters, and yet when in proper condition, the hunter never becomes fat. The reason is, that these substances, by the constant exercise which is given, are consumed in the lungs, while, under different circumstances, the same horse with little exercise and little oats, being fed chiefly with straw, hay, and turnips—articles that do not contain a quarter part of the fattening principle of food contained in the hunter's diet—would be found plump and fat. Here we have the normal and abnormal conditions compared together, as they regard the capability of horses to undergo fatigue, since the well-conditioned hunter is capable of undergoing great exertion with very little fatigue—while the frothy lather with which the non-conditioned horse is covered after very little exertion evinces undeniable inferiority.

" From what has been stated, then, we may safely conclude that fat is chiefly produced from the starchy matters contained in the food of animals, all the excess of which that is not consumed in producing animal heat is taken back into the circulation, and deposited, in the form of fat, in cells appropriated for that purpose. It would appear also that the bloodvessels have the power of taking back the fatty matter again into the circulation, when it is required; so that one of the objects which this deposition fulfils is to store up, when nourishment is abundant, a supply that may be taken back into the system, and made use of in time of need.

"These accumulations are found in different parts of the bodies of animals of the same kind, some breeds of cattle being disposed to carry fat externally, and others internally, while in others it is mixed in the muscle, forming what is commonly called a proper mixture of fat and lean. In the races of cattle disposed to carry fat externally, the African ox, with a large fatty hump on his shoulder, and the mild zebu of India, with an immense lump of fat on his neck and rump, are striking examples. Among sheep we have many instances of accumulations of external fat. Throughout Arabia and Syria, the countries over which the patriarchal shepherds roamed, the breeds, which are two, are characterised by immense accumulations of fat on their rumps and tails. In one breed, we have an accumulation on the tail, averaging from 14lbs. to 18lbs., while the dead weight of one of these sheep will not amount to more than 50lbs. or 60lbs. The Cape sheep are also of the broad fat-tailed kind. These animals have little or no internal fat, it being chiefly collected on their rumps and tails. Climate must have some influence in producing these characteristics, since the very women are distinguished at the Cape for their prodigious fatty rumps. In our own country, examples of external fat are particularly seen in the once-famed Dishley breed of cattle, which have an accumulation of fat spreading itself over the rump. There appears a tendency of the fatty tissue to remain separate from the muscle, in the improved long-horned breed, the fat mingling less with the lean than in any other of our native breeds. The Hereford breed have also a similar tendency, but not nearly in so great a degree. In the Jersey
breed of cattle, we have an example c
lations of loose fat in the inside. This
is common, more or less, to all good
breeds, for they all turn out well whe
in the 'fifth quarter.' Some French
ish cattle, imported into Cornwall in
mer of 1842, when killed, shewed an
accumulation of internal fat; they
particularly lean and coarse-looking
In the improved Devons, the fat ar
are generally well mixed; while in th
coarse breed of the Devon kind we ha
of inside tallow. The short-horns ca
inside fat in proportion to their size
improved Devons; they are also bette
From these examples we may safely
the better the milking qualities of
are, the more likely is that breed i
carry inside fat."

We hope in a future number to
to give the remainder of this ve
paper.

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*The Journal of the Royal Agricu
ciety of England. Part I, Vol.*
don, Murray. (*Third notice.*)

THE IX paper *On Preparation for t
Crop in Cornwall*, by J. H. TREMA

We cannot do better than tra
whole of this paper to our colum
sure to interest a great many, and
of use to some:—

"The agriculture, perhaps the soil,
wall is peculiar. We have little pas
properly so called. The upland is
to permanent pasture; our valleys
(particularly in the west,) not mu
than the streams that run through th
the soil is of such a nature, that after
of husbandry the land acquires a f
sward, sooner than any I ever saw in o
of England. We may call it, therefor
all convertible land—and it is treate
ingly. The course of husbandry has
speak not now of the old system which
vailed, when corn crops were taken till
was exhausted, and then left for years t
but of the later system, which is even
joined by our leases—the course of h
has been to take not more than two c
in succession, seeds being sown with
It is then pastured for three or four y

ss once cut for hay in the first year,) and a broken up again for wheat. Of late, how- r, a better spirit has arisen—green crops 'e been introduced—the system of alternate n crops and green crops adopted; on farms ere twenty years ago one saw only a small ce of turnips adjoining the homestead, one w sees large fields of Swedish and other tur- s drilled, following the wheat crop, and ning out the barley stubbles for the subse- ent pasture in a state of cleanness utterly known before. The new system, however, ls for a change in the application of manure. der the old, nearly the whole manure (chiefly ne, from about 80 to 120 Winchester bushels acre) was applied for the wheat crop—xed, perhaps, with the small quantity of very lly made dung which the farm afforded—or the farmer chose to apply this dung to a 'ourite piece of grass land) mixed only with th from ridges ploughed in the fields. Under new or alternate system, if the lime is ap- ed to the wheat, and dung or bones or other rchased manure applied to the turnips, there not enough taken out for the lime—and if the e is discontinued, it is generally supposed crop of wheat will be deficient. I have long ught on this—and, moreover, thought that general preparation for wheat was very perfect: that system is, to plough the three our years' sward in June or July (turning f upon half, as the provincial expression is,) k it down, harrow and roll it in September, then plough clean for wheat in October or vember, immediately before sowing. It urred to the person who manages this farm, a great improvement might be made by ughing in February, instead of June or July, sowing rape in the spring. That has ac- rdingly been done on this farm for two or e years. We were at first afraid to dispense our lime, and applied the usual quantity e sowing the rape in May We had abun- produce—kept our sheep on it through summer with great advantage—and though wheat of this summer (1842,) owing to the winter of 1841-2, was thin on the ground, I no doubt we have on ordinary land more four quarters per statute acre. There can o doubt that what was taken out of the lime re by the rape was fully returned to the by the sheep being hurdled upon it through summer. The loss was the pasture from uary to June on a four years' old ley. The was the keeping our feeding wethers, and sheep following them, from June to Sep- ber or October.

"In consequence of a partial experiment e last year, (and which, though under un- ourable circumstances, was successful,) the experiment this year has been pushed further; and the following has been the course pursued this summer (1842):—

"A four years' old ley was skimmed 2½ inches deep about the 10th of February, not stirred till the 28th of April; the surface was then so well rotten, that after the usual labour in working it down, nothing remained from which ashes could be procured. The ashes made from the fuel used in this house have been entirely neglected—wood and coal ashes mixed—and when they have accumulated to some extent, carried to the garden, where they have been screened, the large cinders used for the fires there; some of the ashes, perhaps, applied to garden purposes, and the refuse thrown by. About *six* cart-loads of these small refuse cinders or ashes were collected. Having been exposed to all weathers, they would not run through the drill; one load of lime (30 Winchester bushels) was applied and mixed well with them, which had the desired effect of drying and separating them. They were drilled with the rape-seed over about 7 acres on the 5th of May; seven weeks after the rape was stocked with sheep: we continued increasing them, but the rape still gained upon us—seventy-five sheep were upon it for several weeks,—the greater part of which were fattened, and all maintained during the summer; fifty young wethers are now upon it (Sept., 1842,) with some other sheep; and it will keep them till it is ploughed for wheat some weeks hence. The land is perfectly clean; and we think it so well manured that *no lime* is to be applied for the wheat crop. As to the effect of the coal-ashes on this crop of rape, it may be observed that on a few spots the cinders, occasionally choking the drill, prevented a perfectly regular distribution of them; these spots are plainly to be seen, showing a contrast, as between a healthy and unhealthy plant. It may be supposed, too, that there was a large proportion of wood-ashes—this is impossible. The original proportion of wood-ashes was trifling to the greatest degree as compared with the coal.

"A feeling is beginning to prevail in this county unfavourable to lime as a manure. I am far from participating in that feeling—but if by rape and sheep we can save a part of the lime bill, it is an advantage not to be lightly regarded. Those who think badly of hurdling long-wooled sheep on turnips will observe that their objection, viz. that such a practice punishes the sheep, cannot apply to this system, which is only in operation between June and October.

October, 1843.

"The above was written about September, 1842. A year has since elapsed; and the wheat which was then to be sown has been reaped and saved. It is the best crop on the farm, though on very ordinary land. It was drilled in the usual manner, 16 gallons to the acre. A quarter of an acre of the field was fully manured with lime a little before the wheat was sown. It is but fair to add, that this lime was not well mixed, and that the quantity was greater than usual. At harvest this appeared rather thicker on the ground than the rest of the field, but to have suffered more from the rain; its hue was not so good, and it had every appearance of being a lighter sheaf. A square yard of this was cut and separated from the rest, as was also a square yard of the part not manured with lime immediately adjoining. The produce of these 2 yards has been now thrashed, and is as follows:—

1st. Wheat not manured with lime, 31 half-pints, weight 13½ lbs.

2nd. Wheat manured with lime, 28 half-pints, weight 11 lbs.

No. 1. At the rate of 38 bushels 3 pecks per acre.

No. 2. At the rate of 35 bushels per acre.

The wheat from the part not manured is the brightest sample.

"All single experiments made like this on a small scale are exceedingly fallacious, but I fully believe the difference on the whole piece to have been equal to that shown in the experiment. It is very possible that in a hot and dry summer the result might have been different—but, at all events, we have a very good crop of wheat, had the advantage of feeding many sheep through the summer, and saved the lime bill."

Heligan, October, 1843.

The X paper is on the *Farming of Wiltshire*, by Mr. Edward Little.

To those who know the county of Wilts it is unnecessary to follow Mr. Little through the broad distinction as to soil and general farm management which prevails: to those who do not know the county we may say, North Wilts, which Mr. L. describes as the *oolite district*, is a land of enclosed pastures and dairy farms, whilst the southern division of the county is open, unenclosed, and arable, resting upon chalk, which he calls the *chalk district*. Of this latter district Mr. L. writes:—

"Nearly the whole of the soil of South Wilts now under cultivation consists of flinty and chalky loams, with various mixtures of chalk-marl, green sand, and gault or clay, and may be treated of under the following heads:—1st, chalky and flinty loams; 2nd, the down or beak land; 3rd, the heavy white lands;
the sand land. The size of the far
from 100 to 2000 acres; there are b
large as 2000, the general size may b
be from 400 to 1000. There is usual
tion of down to each farm."

The rotations being—

"The system of cropping pursued
Wiltshire varies considerably, the soil
uniform; but it appears that the hea
lands and the sandy loams, which are
wheat-lands, are cropped in a three-fiel
and on the best and richest of these soi
is sown every alternate year. On the c
flinty loams, where barley can be grow
vantage, the four-field course is adop
on the light down, or "beakland," as it i
of which there is usually a portion at
the farm, it is farmed on a five or a
course, as the quality of this land vari
being two kinds of it—the strong red o
sour land," and the light or black land

Rotation of Crops on Flinty and Chalk

"This kind of soil comprises th
portion of South Wilts, and is well ad
the growth of barley and turnips. It i
cropped in the four-field, or Norfolk co

1st. Wheat.
2nd. Vetches and turnips.
3rd. Barley.
4th. Clover.

"Much of the land has been fou
'clover sick' by a strict adherence to th
for many years; and the following rot
in consequence been adopted by many

1st. Wheat.
2nd. Barley, half sown with clov
3rd. Half clover, mown for hay;
Half vetches and swedes.
(Winter turnips and rye are sown af
vetches are fed.)
4th. Half clover, fed, or sometim
up and sown to green food
summer vetches, &c.
Half rye, early turnips, rape,
After the rye is fed the land is sown wit

"In this course, clover is sown onl
eight years; the barley may be sow
earlier, and the produce is conseque
better quality; nor is the quantity fou
deficient. It also gives an opportunit
serving a portion of swedes for sheep la
spring, at the time when they are
wanted; and the land is also in a hig
of condition for the wheat crop. Wh
are no water-meadows on the farm, to
for the deficiency of hay from this
crops, there is an extra quantity of
sown.

: *Flinty Soils.*—There is a lighter des·
of this soil generally termed "beak-
r down-land, and more of this kind has
ought into cultivation within these few
aasmuch as vast breadths of the downs
ken up every year, and not, as was for-
he case, crops of corn taken till, accord-
ı quaint expression, 'an old corn would
duce a new one,' and then laid down 'to
out there is now a more regular system
ure by the use of artificial manures
are chiefly used, as best adapted to this
these lands are found to produce good
of corn and turnips. The system of
ıg is *generally* five-field:—

t. Wheat.
ıd. Swedes or turnips.
d. Oats or barley.
h. and 5th. Grass two years, or broken
up the second year for rape and
vetches.

practice is found to be a good prepara-
r wheat, as the land is better manured
ndered firmer by the sheep feeding off
en crop; for on this kind of soil firmness
ıtially necessary to a good crop of wheat.
and yards are continually springing up
hills, consequently manure is made where
ost wanted. A large portion of these
found to carry good crops of sainfoin, of
some is commonly found on each farm.
sual plan is to sow a piece every year,
t it stand five or six years: about a
or something more, may be said to be
erage number of acres kept to sainfoin,
varies according to circumstances—such
nature of the soil, the quantity of down
ɔd to the farm, &c.; but sainfoin is con-
l indispensable on a stock-farm.

vy White Land.—The general course of
ng the heavy white lands of this district
three-field, this kind of soil being best
d for the growth of wheat; it is, in fact,
ly corn crop taken by some farmers, ex-
g enough of oats and beans, &c., suffi-
for the use of the farm. Those who do so,
ıus:—

ar. Wheat: one-third sown with clover.
ear. One-third clover (mown for hay;)
One third beans, oats, peas or vetches;
One-third swedes. (Rye, or winter
barley, or vetches, are usually sown
on a portion of the swede field.)
ar. One-third clover, fed, summer tilled
or sown to green crop;
One-third early turnips or rape;
One-third rape, or summer vetches:
or some prefer a clean fallow after
the swedes.

lover is in this course sown only once in nine years; and the green crops are changed every rotation. It gives an immense quantity of green food; the whole, or nearly so, is fed on the land with sheep, which keeps it in very high condition. This system is only pursued by the the best farmers: the more general one is,—

1st year. Wheat.
2nd year. Half oats, sown with clover;
Half swedes, vetches, or beans, &c.
3rd year. Half clover (mown for hay);
Half turnips, rape, &c.

But some adopt the following:—

1st year. Wheat; half sown to clover.
2nd year. Half clover (mown for hay);
Half swedes, vetches, oats, &c.
3rd year Half clover, fed, or summer tilled;
Half rape, turnips, summer vetches,

"Horse-corn being so little wanted since the completion of railways, more attention is given to the growth of green crops, and less to that of oats and beans, which formerly made one field in the course; and the sheep stock is thereby considerably increased."

Sand Land.—There being but a small proportion of this description of soil, and that little varying much in quality, the courses of cropping also vary. The only remarkable feature in Mr. L.'s report on this part of the subject is that the soil has become tired of Swede turnips.

There appears to have been much change in the management of the crops of late, for

"Wheat is not sown so early as formerly even on the hills and the light lands; Michaelmas is considered early, but November is the principal seed-time. On the sands, December is considered the best time. There is a good deal of spring wheat sown after turnips and swedes, instead of barley; particularly where the land is not kind for barley. Drilling is now almost universal, except on some heavy land, where some farmers stil continue to sow broadcast. Two bushels to the acre are the quantity usually drilled, and the drills are from 7 to 9 inches apart: half a bushel more is sown when the broadcast method is preferred. Wheat is reaped at prices varying from 7s. to 12s. per acre.

"Barley is sown much earlier than formerly; March and April are now the principal seed-time; and drilling is universal. One sack to an acre, with drills 7 inches apart, is the usual plan. It is mown at 2s. per acre. Oats are not grown in large quantities, except on the down-lands, where they are sown instead of barley, and drilled and mown in the same manner.

"Beans are not grown so much in this district as formerly, even on the soils best adapted to them, there not being the usual demand for horse-corn. Dibbling at one foot square is the plan of sowing: the price of cutting is much the same as with wheat, but varies according to the crop. Peas are not extensively cultivated for sale, but chiefly used on the farm: being an uncertain crop, little attention is paid to the cultivation. Drilling, at 18 or 20 inches apart, is the method of sowing: cutting, at from 3s. to 5s. per acre. Swedes and turnips are grown in all the different soils of the county, and are nearly all consumed on the land by sheep; a few only are carried off, as stall-feeding is not adopted. Where artificial manures are used, drilling is the invariable practice; but where yard-manure is applied, particularly on the heavy lands, broadcast has its advocates. There are very few farmers who drill on ridges; drilling on the flat, from 15 to 24 inches apart, according to the soil, or the opinion of the grower, is the general practice. Horse-hoeing is by no means general; neither is cutting turnips in the field for sheep, except occassionally for young sheep and lambs, or for grazing sheep. Storing of swedes is become very general, and the method considered to be the best is throwing 7 or 8 bushels in a heap, and covering them with sufficient earth to keep them dry and exclude frost. Mangold-wurzel is only patially cultivated, and on the deepest soils. Rape is a favourite green food in autumn with the South Wiltshire farmers, and is very extensively cultivated: it is sown by itself, and with turnips and vetches. Rye is mostly sown as green food for early spring feeding. On some of the light hill or "beak-land" which is considered too weak to carry wheat, it is occasionally sown for seed. Great breadths of vetches are sown in the autumn and spring, for feed; and they are considered a good preparation for wheat on the heavy lands. Very few are kept for seed, except in seasons when there is an abundance of food for sheep. Potatoes are not at all a favourite crop in South Wilts, particularly on the large farms. Many farmers let out a small portion of land to the labourers, which generally forms the extent of this crop, except on the sand-land, where they are rather more cultivated. The artificial grasses sown on the light lands of this division are a mixture of hop or trefoil, with rye-grass and white clover. Red clover is sown on the heavy lands, and such other soils as are calculated for its growth. Cow grass and marl grass are found to be good substitutes when the *land is tired of* red clover. A great proportion of *the flinty and chalky* soils are found to bear good *crops of sainfoin,* which is now generally taken *advantage of;* indeed, sainfoin is indispensable
to the stock farmer, being the most n
grass that is cultivated. Italian rye-g
lately been introduced, and found to be
able grass for early spring feed on farms
there are no water-meadows."

This division of the county is s
possess some of the finest water-me
in England, but those, according to M
are not so great now in *real* value
depreciation being rightly, we think,
butable to the green-crop system.
manures of the district that from th
tom of *sheep-folding* stands first. *Bon*
however, much used. *Coal ashes* ar
employed extensively on sand land
top-dressing for young clovers.
burning has its advocates, being re
introduced as a means of increasin
fertility of the soil.

The prevailing sheep upon this d
is the South Down.

Of the implements the *ploughs* are
country make. The *drills* are from S
and hired by the farmers at 1s. 3
acre for corn, and 2s. an acre for tu
Broadcast machines are also used.

MANURES.

Subjoined are the prices of several s
of manure:—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. per c
Guano, 10s. to 12s. per cwt., accord
quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. pe
landed and housed, 38s. to 42s. pe
Nitrate of Soda, 16s. 0d. (duty pd.) per
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per
sufficient for three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 6s. per cwt.
Compost, £3. 12s. 6d. per hhd. suffici
three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphuric Acid, 1½d. per lb.
Sulphur for Destroying Worm on Turni
per cwt.
Sulphate Soda, 6s per cwt.

FAIRS IN DECEMBER.

ESEA.—*Aberffraw* 11, *Beaumaris* 19, *ell* 26, *Llangefni* 25.—CARNARVON- -*Bettws* 3, *Cae-braich-y-cafn* 13, *Car-* ;, *Sarnfolltyrn* 2.—DENBIGHSHIRE.— *y* 6, *Cerrig-y-Druidion* 7, *Llanrwst* 11, *Foelas* 5, *Ruthin* 9, *Yspytty Evan* 2.— HIRE.—*Holywell* 13, *Mold, Christmas* *Asaph* 15.

HIRE.—*Malpas* 8, *Nantwich* 4, *Nrrth-* *Sandbach* 27 *Tarporley* 1 .—LANCA- ·*Clitheroe* 7, *Colne* 21, *Leigh* 7.—SHROP- *Ludlow* 6, *Newport* 10, *Oswestry* 10, *ry* 11, *Wenlock* 4.

The Markets.

AT.—*The discouraging reports from the suming markets, the inferior condition of les exhibited, and a greater degree of m the part of farmers to realise, have to depress prices of Wheat* 1*s. to* 2*s. per eral of the principal shipping ports on coast.*

emand for FLOUR *has in no degreo im- ut sellers have refused to accept lower d quotations have been steadily supported.*

EY.—*Choice parcels have not given way but middling kinds, whether for malting ing, have been parted with at terms which t previously have been taken.*

emand for MALT *has been slow; no as taken place in quotations.*

—*The confidence of sellers has increased, g it difficult at the close of the week to at the currency of the previous market.*

S.—*Though the demand has unquestion- curtailed by the high range of prices, it d sufficient to prevent any reaction.*

have not excited much attention, but oilers have been taken at fully former The cause of the latter gaining more pears to be that comparatively few sam- r own growth are found to break well, rity characterizing this year's produce, cently much noticed.

LONDON, Nov. 25.

		Per	Qr
WHEAT, Essex and Kent, new, red		46	48
White................	46	50	54
White, old		52	56
Irish................		0	0
RYE, old		30	34
New		36	—
BARLEY, Grinding		28	32
Malting		36	40
Chevalier............		41	42
Irish................		26	28
Bere................		26	—
MALT, Suffolk and Norfolk		58	63
Brown		56	60
Kingston and Ware		60	—
Chevalier.............		65	—
OATS, Yorksh. & Lincolnsh., feed		22	23
Potatoe................		23	24
Youghall and Cork black..		21	22
Cork, white		22	23
Dublin		22	—
OATS, Black		22	—
Scotch feed		23	24
Potatoe		25	27
Limerick		23	24
Londonderry		22	23
BEANS, Tick, new		36	37
Old, small		36	40
PEAS, Grey		36	37
Maple		36	37
White		36	38
Boilers		38	40
SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.			
Linseed, Baltic..30 38 Odessa..42			
Mustard, White...... 6 7			
Brown .... 8 11 per bush.			
FLOUR, Town-made — 45			
Suffolk.... 33 35 per sk. of 280 lbs.			
Stockton and Norfolk		33	35

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		32	36
Hamburgh..............		30	—
Rostock		30	—
BARLEY......................		24	29
OATS, Brew		17	18
Feed		15	17
BEANS	—	24	22
PEAS		28	32
FLOUR, American, per barrel		—	21
Baltic		—	20

LONDON AVERAGES.

			£.	s.	d.
Wheat	3323	qrs.	2	9	4
Barley	2570		1	16	7
Oats	15261		1	2	8
Rye	16		1	13	1
Beans	928		1	16	2
Peas	814		1	17	7

SEED MARKET.

	s.		s.
Canary, per qr.	52	to	56
Carraway, per cwt.	44	to	52
Clover, red, English	—	to	—
„ „ Foreign	—	to	—
„ white, English	—	to	—
„ „ Foreign	—	to	—
Coriander	12	to	18
Hempseed, per last	35	to	36
Linseed Cakes, Eng. p: 1000	£10	to	£11 —
„ „ Foreign, p. ton	£8	to	£9 10
Mustard, white, per bushel	10	to	14
„ superfine „	12	to	16
„ brown „	12	to	16
Rapeseed, English, per last	£23	to	25
Tares, English, winter p. bushel.	5s 0d	to	6
Foreign „ „ „	—	to	—

LIVERPOOL, Nov. 23.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ⅌ 70lbs.	7	8	8	3
Ditto, red	7	3	7	6
Irish white, new	6	4	6	9
Egyptian	5	6	5	9
Oats, Eng. mealing, ⅌ 45lbs.	3	3	3	6
Irish	3	2	3	3
Welsh	2	9	2	10
Barley, Eng. malting ⅌ imp. qr.	36	0	42	0
Grinding	0	0	0	0
Irish and Scotch	4	6	5	2
Rye, per imp. qr.	30	0	32	0
Beans, English, per imp. qr.	44	0	48	0
Irish and Scotch	38	0	42	0
Foreign	40	0	44	0
Egyptian, per 480lbs.	31	0	32	0
Peas, English, per imp. qr.	40	0	42	0
Foreign	36	0	40	0
Malt, per imp. qr., fine	63	0	66	0
Flour, English, per 280lbs.	39	0	41	0
Irish	37	0	40	0
Foreign, duty-paid, per 190lbs., U.S.	26	0	27	0
Canadian	25	0	26	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	24	0	25	0
Irish	23	0	24	0
Indian Corn, per 480lbs.	31	0	33	0

PRICE OF AGRICULTURAL PRODUCE

LIVERPOOL, Nov. 23.

Hay, best	1s	2d	*Potatoes.*	s.	d.
Clover ditto	1	0	Short tops	1	8½
Green ditto	0	2	Red apple	0	0
Vetches	0	0	Cups	1	9½
Straw.			Cattle	1	6½
Wheat	0	5	Turnips pr ton	22	0
Oat	0	5	Carrots	33	0
Barley	0	3¾	Mangle	21	0

DUBLIN CORN EXCHANGE—N

	s.	d.	
Wheat, white (per brl.)	26	0	tc
„ red do.	24	6	to
„ inferior, do.	22	0	to
Oats, feeding, new	11	6	to
Flour, first (per cwt.)	16	0	to
„ second do.	14	6	to
„ inferior do.	11	0	to
„ third do.	6	0	to
Oatmeal do.	11	0	to

CHESTER, Nov. 23.

	s.	d.
Wheat, white, 75lbs. new	7	6
Ditto, red	7	0
Oats, 46lbs., new	3	6
Grinding Barley, per 60lbs.	4	3
Malting ditto, 38 qts.	5	9
Beans, new, per 80lbs	6	9

WAKEFIELD, Nov. 22.

Wheat, new, red, 44*s. to* 46*s.; ditto,* 44*s. to* 47*s., fine* 51*s. Oats,* 18*s. to* 22*s. f* 23*s. per qr. Barley,* 31*s. to* 33*s. Beans, to* 42*s. fine to* 44*s.*

Cattle Markets.

LONDON, SMITHFIELD.

Nov. 25, 1844.	⅌ st. of		
	s.	d.	
Inferior coarse beasts	2	6	to
Second quality do.	2	10	to
Prime large Oxen	3	4	to
Prime Scots, &c.	3	10	to
Coarse and inferior Sheep	2	10	to
Second quality do.	3	4	to
Prime coarse woolled do	3	8	to
Prime Southdown do	4	0	to
Large coarse calves	3	0	to
Prime small do	3	8	to
Large Hogs	3	0	to
Neat small Porkers	3	8	to

LIVERPOOL, Nov. 18.

	s.	d.	s.
Beef, per ℔.	0	4½	0
Mutton	0	5	0
Lamb	0	0	0

The supply of cattle consisted of 1,542 *and* 4,148 *sheep, viz.,* 1,476 *beasts and sheep from Ireland, and* 66 *beasts and sheep from Scotland.*

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

DECEMBER—1844.

TO THE READER.

The completion of the First Volume of The British Cultivator and Agricultural Review, brings its Editor before his readers with many apologies for the omissions and imperfections with which he is aware his work abounds—circumstances over which he had no controul have prevented his making it what he originally intended it should be, and what he hopes to be able to render it in future.

Arrangements have been made which will furnish a more extensive selection of original papers for the ensuing volume, and will ensure the delivery of its monthly numbers punctually with the magazines.

For the rest, all new books and implements of standard excellence will be brought to the notice of the reader as they appear. The market report will be a carefully condensed review of the trade operations of the past month, with the averages and duty, instead of the present tables; and every effort will be made to render the work alike useful to the Landowner and the Tenant Farmer.

Advertisers will find the '*Cultivator*' an eligible vehicle of communication with the agricultural public and the great mass of the rural population, the cover of a journal of this description having the great advantage over the columns of a newspaper in respect to advertisements, that they are continually before the reader, whilst a newspaper is thrown aside when it is but a few days' old.

FARM AND GARDEN OPERATIONS.

JANUARY.—The plough, in open weather, to be kept at work on suitable soils. Land intended for peas, vetches, barley, and oats, should be ploughed; and, during the month, these crops may be sown on dry ground. Manure may be carted. Cart pond mud, ditch scrapings, and remains of old banks. If the weather is open now is a good time for the sub-soil, or sub-turf plough to be at work in fallows or pastures. If the weather is soft, and the worms or slugs attack the wheats, sow four or five bushels of salt per acre over them early on a moist morning; the expense is trifling—the cure certain. Attend to live stock, give your sheep and cattle rock or other common salt in their troughs. Ewes for early spring now begin to lamb, prepare the yard for them; cabbages are now very valuable food for them. Look to and mix the manure of your farm-yard. Look to your fences, and cleanse ditches. To promote early laying, give your poultry buckwheat and barley.

In dry weather, in the garden, trench vacant spots of land, the parts where the main crop of carrots is to be sown &c., get in readiness hotbeds. Sow Warwick peas, onions, carrots, lettuces, radish, and parsley, all in sheltered or protected situations; on hotbeds, sow cauliflower, melons, cucumbers, kidney beans.—Sow also in heat, the seeds of tender and half-hardy annuals, thus getting them in readiness for the flower garden in April.

FEBRUARY.—Plough in open weather. The seeding should now be getting forward of oats and barley. Vetches, peas, beans, Talavera and other spring wheat, may now, in and underwood. Look to your live stock: they very commonly suffer more severely this month and the next, by the weather, than during any others. Give your sheep oil cake when feeding on turnips. Stock ewes are now commonly beginning to lamb: look carefully to their cleanliness and and their warmth, but beware of keeping them too much in wet yards. The lambs will bear a dry cold better than wet warm lying. On turnips, all sheep now require hay or other dry food. Turn up your fallows in ridges for the frost. You may now sow cabbage seed for planting out in May and June. Plough and subsoil your land for carrots and parsnips sow the seeds, dress your grass lands, open the trenches, in meadows crop pollard trees for firewood, and other farm purposes. Sow sainfoin as early as the season admits, and by the drill. Examine your drains.

In the garden, sow in warm borders, peas, beans, spinage, lettuce, radishes, savoys; and in moderate heat, cauliflower, celery, cucumber, kidney beans, and potatoes. Sow seed of tender and half-hardy annuals for flowering in the green house, and planting out in the flower garden in May, such as balsams, cockscombs, stocks, phlox drummondii, ice plant, ipomopsis, browalias, salpiglossis, schyanthus, maurandias.

MARCH.—If any beans, peas, or vetches still remain unsown, this is the latest period when the work can be successfully accomplished. Sow spring corn in fine weather. Oats, barley, flax, and hemp-seeds should be sown, and not later, and clover and other grass seeds with the spring corn, or amongst wheat. During this month carrots and parsnips are generally sown on the light lands of Norfolk. Top-dress wheat with either soot, ashes, lime, or salt and lime. Sow lucerne towards the end of the month. Pick off the stones from young seeds. Prepare your potatoe ground, and plant towards the end of this month. Alders gets warm. This and August are the best months for sows to farrow. Attend to your poultry.

Sow, in the garden, asparagus, celery, beans, cauliflowers, brussels sprouts, brocoli, borecole, beet, spinach, onions, carrots, peas, and turnip-rooted radishes. Plant seacale, asparagus, and cauliflowers from frames. If the weather is fine towards the end of the month, sow main crops of onions, and the second sort of peas for main crops; plant rhubarb, sow melons and cucumbers, &c. in hot-beds.

APRIL.—Mangel wurzel should be sown from the middle to the end of this month. Lucerne is sown this month. Cut and lay hedges, and roll and bush harrow grass land. Stone pick, and clean meadows, and hoe your wheat, beans, and peas. Early fat lambs may now be selling off. Sell off the porkers. Sow carrots and parsnips, and subsoil the land on which you grow them. Plant the main crop of potatoes. Live stock now require the farmers vigilance

Sow now main crops of peas, beans, onions, lettuces, turnips, spinage, and in short, every description of culinary vegetables. Plant potatoes, potatoe onions, cabbage, and cauliflower plants, asparagus and seacale; towards the middle of the month sow hardy annuals.

MAY.—Weed and hoe your wheat. Finish under draining land. Get your land ready for Swedish turnips; sow these in drills, taking care to have you soil well worked, and use plenty of seed; you should always have a good stock of young cabbage plants to fill up the vacancies in the rows of your swedes. Cleanse your beans and peas; do not be afraid of hoeing in very dry weather. Carry out dung from your compost heaps. Lucerne may be sown. Potatoes, carrots, and cabbages should be hoed this month. Finish sowing mangold wurzel the first week; keep your fallows well stirred. Attend to the soiling of your live

for Swedes, putting the plants three feet apart—about 7400 plants are required per acre. Rape and turnips for autumn feed, preparatory for wheat, are sown towards the end of the month; at this time the mixed artificial grasses will be on early soils ready for the scythe.

In the garden sow capsicums, cauliflowers, lettuces carrots, beets, sea-cale, asparagus, beans, peas, and kidney beans; transplant winter greens, &c. Sow annuals in open garden, but avoid artificial watering.

JUNE.—Great damage is frequently done by leaving the first crop of seeds too long uncut. Your fallows now demand your earnest attention; continue to plough and and cleanse them. Finish sowing Swedish turnips. Where your swedish turnips fail, fill up the rows with cabbage plants; hand and horse hoe them. Buckwheat, vetches, &c., when intended for manure, may be ploughed in now, just as they are going out of bloom. Plant out cabbages. Weed your wheat, peas, and beans. Soil your live stock. Cut clover, meadow-grass, and sainfoin for hay. Cart out manure, and plough it in as soon as you can after it is spread. Wash and shear your sheep. Hoe carrots and potatoes. Weed flax. Tie your hop bines, and prune them when needful. Hoe carefully young lucerne. Carry chalk, marl, and clay. Clean out ponds; husband the mud. Sow coleseed. Take care of milch cows, that they are not overheated. This is a proper time to plant holly hedges; but they are the best of all hedges when sufficiently grown; they succeed best on the level ground, protected from live stock by fencing, or two rows of hurdles. Burn clay and lime mix lime and salt together, dry for your wheat, at the rate of two bushels of lime and one bushel of salt; protect the mixture from the weather. For boggy or peaty land, lime is an excellent dressing. Look to the ees, they are now about to swarm. This is a good time o inclose waste land. This is the month to form tanks for liquid manure. Towards the end of the month, the sowing of Aberdeen, bullock, and the varieties of hybrid Swede turnips, commences, and these are followed by the different round turnips. Hand weed all your corn—cut down weeds in the hedges—do not let them ripen their seed.

Sow turnips, radishes, spinage, and carrots, where they may have failed. Plant out celery, savoys, cauliflowers, Autumn brocolis, leeks, lettuces, cucumbers, and kidney beans. Thin onions, parsnips, turnips, &c., also annuals. Gather kitchen herbs for preserving, lift hyacinths, tulips, &c., which have done flowering. Repot auriculas, and polyanthus.

JULY.—Rye and early peas are usually harvested, in this month, and often afford the opportunity for sowing the stubble with a quick growing turnip. You may have to sow two or three times for this valuable root, but have in case of need, especially for your Swedish turnip land, a copious supply of cabbage plants ready to fill up all gaps. Rape and coleseed may be sown, either after tares or amongst beans, to be fed off for wheat. Let your sheep have shade, and water. Ewes, to produce early lambs, should be well kept this month, that they may be the more ready for the ram the beginning of next month. Take the boars from the sows from this month until the middle of November, that the sows may not farrow in winter. Horse-hoe potatoes. Hoe carrots. Lucerne may be cut and hoed this month; do not mow it too close to the ground, close cutting injures it. Fold your sheep on the lands intended to be first sown; wean lambs. Carry earthy manures;

beet, carrots, kidney beans, lettuces, parsley, peas, turnips, radishes, and spinach; hoe and thin, stir ground between plants.

AUGUST.—Do not let the corn become too ripe before you begin to cut; but not too green. Wheat, when ripe and free from weeds, may, for stacking, be cut and carted immediately; whilst in earlier stages, and with any green amongst it as many as six or eight day's field room is necessary. Turnip hoeing, however, must now be going on. Coleseed, or the "six week's turnips," may also be sown in the early part of the month in some of the ploughed stubbles. In harvesting corn prefer stacking. About the first of the month turn the ram to the ewes for early fat lambs. Stock farmers now sell off their lambs and draft ewes. Wether flocks should now have good keep to forward them for turnips. Sows should farrow this month. Collect fern and heath for winter litter.

Garden.—Sow stone turnips upon ground where early potatoes have grown; sow onions for spring, also early cabbage, spinage, cauliflower, parsley, savoys, leeks, &c. Sow also seeds of perennials, annuals, &c. Gather herbs.

SEPTEMBER.—Plough your fallows for the last time. The end of this month the main crops of wheat must begin to be sown on cold clay soils. Plough your bean, and pea, and clover lays, or stubble, for this crop. Look now to your seed wheat. Sow, however, as soon as you have steeped. Dibble all you can. Carry out the compost, and spread it on your land. Sow your first crop of winter tares early in the month. Stock reject the young corn, and much waste ensues. Drill a little manure with the seed. Look well to your live stock; wean the early foals; the till March, for young pigs suffer much from cold. The boar should be kept from the sows from June till Nov. The best kind of food for feeding pigs is a mixture of barley-meal, peas, and potatoes. Plough your winter fallows; lay them up in ridges, that the frost may penetrate, and destroy grub and other vermin. Keep the hoe at work in the late turnip fields, if possible, the horse hoe. Look to and clean your poultry-houses—feed your geese.

In the garden sow onions, spinage, early horn carrot, lettuces, and ox cabbage. Sow perennials and annuals for early flowering in the spring; bud roses, &c., earth up celery, plant everlasting potatoes, &c.

OCTOBER.—The business of the last month may be continued. Seed wheat, winter beans, and tares for a second crop may be sown, corn thrashed and lands ploughed for wheat. Plough or fork up potatoes; protect these from frosts. Do not consider wheat sowing completed until your land drains and ditches are thoroughly scoured. Look to your fences. Finish dressing your meadows. Collect stubble, and plough your winter fallows. Begin to feed your fatting sheep on turnips; do not omit to give them salt; they will be all the better with some dry food, such as hay, or oil cake. It is a good plan this month to broadshear and harrow the stubbles. Oxen may now be tied up for Christmas beef. Put up full grown hogs to fatten, and for pickling or porkers a succession of smaller pigs. Towards the end of the month your horses will require dry meat. Cows must now be taken into the yard, and soiled. Dig up parsnips and carrots, and carry Swedes and mangel wurzel for store. Dress and plough your land intended for beans and peas towards the end of the month. Complete your liquid manure tanks.

Sow, in the garden, radishes, carrots, early frame and Warwick peas, lettuces, and beans, in warm situations. Earth up cabbage, greens, &c.; take up carrots and par-

and hyacinths, of sorts, and other sorts of hardy flowering bulbous roots.

NOVEMBER.—The corn-fields should be especially watched. In suitable weather sow wheat on your turnip lands. The cattle, too, require an attention to their warmth, and regular feeding. Boars may be put to the sow towards the end of this month. Foals should be weaned. Cattle for stall feeding are now tied up. Swedes are at their full growth, and should be drawn and stored the end of this month. Wood cutting commences this month. Take care of your sheep when feeding on turnips. Hay, straw, and oil-cake are now invaluable additions to their green food. During this and the succeeding winter months, the subsoil plough may be advantageously used during open weather—a very valuable practice for most soils.

Garden.—Lettuce and endive may still be planted. Carrots should be stored. Get the beds ready for planting with tulips, hyacinths, ranunculuses, &c. Trenching and all kinds of new ground work.

DECEMBER.—Ditches may be cleansed, fences repaired. plantations of fruit and timber trees finished, turf may be collected, earths carted from either ditches, old banks, marl, or clay, or chalk pits, as beds for future dungheaps. Live stock require a regular supply of food. Potatoes may be steamed, and advantageously mixed with chaff. Put the boar to the sows. Fat cattle should be forced on. Repair roads. Flood your water-meadows, and extend and improve them. The sheep now require considerable attention: give them dry food and salt. Wood-cutting should be proceeded with. Attend to your land drains; see that no water lodges on the land.

In the garden dig, manure, and trench vacant spaces of ground; sow early peas and beans, if not sown last month; also cucumbers, radishes, and small salads in hot beds. Plant out snowdrops, iris, narcissus, and other hardy border roots for flowering in spring.

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Ruthin, M 2nd M in Jan, March 19, 20, April 19. 20, F bef Whit-Sunday, July 2, 3, Aug 8, Sep 30 Nov 10, second M in Dec
Wrexham (Th S) third Th in Jan. Mar 23, Holy Th, June 16, Aug. 7, September 19.
Yspytty Evan, March 17, May 21, July 1, Aug 13, Sep 15, Oct 23, December 2
Y Waen, Feb 10, June 10, Aug 12, November 12.

DEVONSHIRE.

Ashburton, (S) first Th in March & June, Aug 1, Oct 3, Nov 11, c
Axminster, (Tu Th S) first Tu aft April 25, W after June 24, first W after October 12
Bampton, (W S) March 21, Tu in Whit wk, last Th in Oct, Nov 28
Barnstaple, (F) F before April 21, Sept 19, second F in December
Bideford, (Tu S) Feb 14, July 18, November 13
Bow, (Th) Holy Th, November 22
Bradminch, (Th) May 8, Oct 2
Broadhembury, November 30
Broadworthy, September 9
Buckland, Whit-Tu, November 2
Chagford, (Th) last Th in March, Sept, Oct, first Th in May
Chumleigh (F) W in Easter week, last W in July
Chudleigh, (S) Easter Tu, third Tu in June, September 21
Churchingford, Jan 25, last F in March and April
Colyford, (W) March 1
Credighton, (S) May 11, July 29, Aug 21, Sep 21, great cattle market, last S in April
Cullompton, (S) first W in May and November c
Culmstock, May 22, October 1
East Stonehouse, May 2, second W in September
Exbourn, third M in April
Exeter, (Tu F) third W in Feb, May, and July, second W in December
Exminster, first Th in May
Exmouth, W S, April 25, Oct 28
Gt Mark, Tu before third Sat. in March, Tu bef May 4. Tu before September 19
Hartland, S, W in Easter week, September 25
Hatherleigh, F, May 21, June 22, Sep 4, Nov 8 c
High Bickton, May 3, Dec 21
Holdsworthy, S, April 27, a large one for cattle, July 9, c, Oct 2
Honiton, Tu, Th, S, W after July 19, c.
Ilfracombe, S, April 14, Aug 23
Kentishbeare, Whit-W
Kilmington, first W in Sept
Kingsbridge. S, July 20, Sep 22
Lifton, Feb 2, Holy Th, Oct 28
Membury, August 10
Modbury, Th, April 23, May 2
Molton, Tu Th S, W before June 22, W after Aug 26, c.
Morebath, M after August 24
Moreton-Hampstead, (S) first S in June, third Th in July, last Th in November
Newton-Abbot, W S, last W in Feb, June 24, 1st W in Sep, Nov 11
Newton-Poppleford, October 18
Neston, March 10, Oct 11, Nov 11
North-Molton, first W after May 12, last W in October
Northawton, third Tu in Apr, Oct 3, December 18
Oakhampton, first Tu aft Mar 11, May 14, first W after July 5, Aug 5, first Tu after Sep 11, first W after October 11
Otterton, Easter W, first W after October 10
Ottery St. Mary, Th, Tu bef Palm Sun, Whit-Tu
Plymouth, M Th *S*, Feb 5, Oct 2.
Plympton-Earl, F, Feb 25, April 5, Holy Th, Aug 12, Oct 29
Sandford, *M* before Lady-Day, *M* after July 26
Seaton, March 11
Sheepwash, F, April 10, Aug 12, October 11
Sidmouth, Th *S*, Easter Tu, *M* aft September 1
Silverton, July 24, Sep 4
Southmolton, *S* after Feb 1, *S* bef May 1, W bef June 22, W after Aug 29, *S* bef Oct 10, *S* before December 12
Star Cross, Whit-W
Tavistock, F, Jan 12, May 11, July 13, Sep 12, Oct 12, Nov 9, December 14
Teignmouth, S, third Tu in Jan, last Th in Feb, first Tu after Midsummer, last Tu in Sep
Tiverton, Tu *S*, Tu fortnight after Whit Sun, Sep 29
Topsham, S, first Th aft July 18
Torrington, S, March 21, Whit-Tu, July 5, Oct 10, Nov 9
Totness, S, Easter Tu., May 12, July 25, Oct 29
Uffculme, W, W before Good Fri, July 6, August 12
Underwood July 5
Upottery, Tu bef Lady-Day, Oct 24
Whimple, *M* se'n't after Sep 1
Witheridge, Wed before April 16, June 24

FLINTSHIRE.

Caergwrley, Shrove Tu, May 10, Aug 12, Oct 27.
Caerwys, first Tu after Jan 12, Feb 11, March 5, last Tu in Ap, first Th after Trinity Sunday, first Tu after July 7, Aug 29, Oct 8, Nov 5.
Flint, first Tu in Feb, May 3, July 4, Nov 3.
Llaneurgain, March 14, July 7, Oct 12.
Holywell, (F) April 23, first Tu aft Trin Sun, Sep 2, (the new market) first Fri after Jan 16, first Fri after Dec 11.
Overton, Monday before Holy Th, June 11, Aug 9, Oct 8.
Mold, (W) Feb 13, March 21, May 12, Aug 2, Nov 22, Christmas eve,
Rhuddlan, Feb 2. Mar 25, Sep 8.
St Asaph, S East Tu, March 21, July 15, Aug 18, Oct 16, Dec 15.

LANCASHIRE.

Ashton-under Lyne, (Satur.) March 23, April 29, July 25, November 21, c.
Bartholomew, April 24, 25, Sep. 24, 25.
Blackburn, (W S) Easter M, May 11, 12, October 17, c. fortnight fairs for cattle from the first Wed. before Feb. 2, till Mich.
Blackrod, Th. aft. July 12.
Bolton, (M Th) July 30, 31, Oct. 13, 14, c. fortnight fairs on Wed. from Jan 5, to May 12.
Booth, May 18, October 19.
Broughton-in-Furness (F.) April, 27, Aug. 1, first F. in October c.
Burnley, (M. S.) March 6, Easter eve, May 9, 13, July 10, Oct. 11, c., horse fair, third Th. in Oct. wool fair, second Th. in July,
Bury, (S.) March 5, May 9, 30 Sep. 18, c.

before Easter, Nov. 5.
Chipping, April 2, Aug. 24.
Chorley, (Tu.) March 26, May 5, c., Oct. 21, horses, September 4, 5, 6.
Chowbent, first S. in May and the last S. in Oct.
Church Town, first Th. in May, first Th. in Aug.
Clitheroe, (Tu.) Mar. 24, 25, Aug. 2, Th. and F. before the fourth S. aft. Sep. 29, and Dec. 7, 8, c.
Cockerham, April 1.
Colne, (W.) Mar. 7. May 13, Oct. 11, an annual on Dec 21, cattle last W. in every month.
Craston, M. bef. Shrove Tu.
Dalton, (S.) April 28, June 6, October 23.
Eccleston, April 14, Trin. M, and November 4.
Garstang, (Th.) April 12, Holy Th. July 10, and 14, Martinmas fair, Nv. 22 23.
Haslingden, (S) Feb. 2, May 8, July 4, Oct. 2, c, Easter Tu. horses.
Hawkshead, (M) Easter M., M. before Ascension day, October 2, c.
Hornby, fortnight fair on Tu. June 20, & July 30.
Inglewhile, May 6, Oct. 5.

April 28, 29, June 24, October 18, 19.
Lancaster, (W. S.) May 1, July 5, Aug. 12, Oct. 10, cattle, cheese.
Leigh, (S.) April 21, 25, Dec. 7, 8, c.
Liverpool, (W. S.) July 25, Nov. 11.
Littleborough, March 1, Oct. 14, 15.
Longridge, March 16, April 16, Nov. 5.
Manchester, (Tu. W. Th. S.) Oct. , Easter M. Whit-M. Nov. 17 for 2 days.
Middleton, (F.) first Tu. aft. March 11, first Tu. after April 15, second Th. aft. September 29.
Newburgh, June 21.
Newchurch, week bef. Easter, October 25, c.
Newton, May 17, c. May 18, horses, Aug. 11, c. August 12, horses.
Oldham, (S.) May 2, July 8, first W. after Oct. 12, c.
Ormskirk, (Th.) Whit Mon, September 10, 11.
Padiham, May 7, Sept. 26, c. Aug. 12, toys.
Poulton, (M.) Feb. 6 April, 13, November 3, c.
Prescot, (Tu. S.) Shrove Tu. W. after Corpus Christi,

Preston (S.) M. following the first Sun. after Epiphany, March 27, Aug 26, Nov 7.
Radcliffe Bridge, April 29, 30, Sept. 28.
Ribchester, March 16, April 16, M preceding Holy Th, Nov. 5, c.
Rochdale, (S) May 14, Nov. 7, cattle fair first M. in the month.
Rufford, May 1.
Standish, June 29, Nov. 22.
St. Helen's (S.) M and Tu. after Easter week, F and S. after September 8.
Stalybridge, (S.) March 5.
Todmorden, (Th.) Th. before Easter c. September 27.
Newcastle, (Tu. S.) Aug. 28, Oct. 29, c.
Ulverstone, (Th) Tu, before Easter Sunday, April 29, Holy Th. Oct. 7, Th. after 23, cattle.
Up-Holland, July 15.
Warrington, (alternate W.) July 18, Nov. 30, continue ten days.
Weeton, May 28.
Wigan, (M. F.) Holy Th. June 27, July 1, Oct. 28.

MERIONETHSHIRE.

Aberdyfi, Aug 6, Oct 20.
Bala, (Sat) May 14, July 10, Oct 24, Nov 8.
Nov 8.
Bettws, March 16, June 22, 12, Sep 16, Dec 12.
Corwen (Tu) March 12, April 16, May 22, July 1, Aug 19, Oct 7, Dec 20.
Cynwyd, Aug 6, Oct 21.
Dinas Mawddwy, S Fri before Pm Sunday, June 2, Sep 10, Oct 22, Nov 13.
Dolgelley, (Tu) Feb 20, April 21, May 11, June 27, Aug 8, Sep 20, Oct 9, Nov 22, Dec 16.
Ffestiniog, March 7, May 24, Trin Friday, June 30, Aug 15, Sept 26, Oct 23, Nov 13.
Gwyddelwern, April 15, August 5, October 18.
Harlech, (S) March 4, April 14, Trinity Th, June 28, August 16, Sep. 22, Dec. 11.
Llandderfel, August 17, Oct. 16.
Llandrillo, Feb 25, May 3, June 29, August 28, November 14.
Llanfachreth, April 22, June 30, August 15.
Llanddwywe, May 12, November 9.
Llanuwchllyn, April 25, June 20, September 22, November 22.
Llan-y-Mawddwy, first Th in Mar, October 18.
Maentwrog, March 3, April 14, May 15, August 15, Sept. 19, November 10.
Trawsfynydd, April 23, August 14, September 21.
Tywyn, (Frid.) March 16, Easter Mon, May 14, September 17, November 18.

SHROPSHIRE.

Albrighton, Mar. , May 23, June 24.
Battlefield, Aug. 2.
Bishop's Castle, (F) F before Feb. 13, Th bef March 25,

1st F aft May day, July 5, Sep. 9, Nov. 13.

Bridgnorth, (S) third Tu. in Feb. 3rd Tu in Mar., May day, 3rd Tu in June, wool, 1st Tu in Aug., 3rd Tu in Sept., Oct. 29, butter and cheese, 1st Tu aft Shrewsbury Dec. fair.

Broseley, (F) Jan, 26, May 29, October 12.

Church Stretton, (Th) Tu bef Shrewsbury Mar fair, May 14, July 3, Sep. 25, last Th in November.

Cleobury Mortimer, (W) Ap. 21, Trinity M, Oct. 27.

Ellesmere, (Tu) Feb. 2, 3rd Tu in Ap., Whit-Tu., July 1, Aug. 26, Nov. 14, *c.*

Hales Owen, (Mon) April 1, June 22.

Ludlow, (W F S) M before Feb. 13, Tu bef Easter, W in Whitsun week, May 1, August 21, September 28, December 6.

Market Drayton, (W) W bef Palm Sun, W bef June 22, Sep. 19, Oct. 24, *c.*

Medley Market, May 29.

Nescliffe, last M in April.

Newport, (S) 1st Tu aft Can-

Palm Sun.,

Oswestry, (W S) third W in Jan., March 15, May 12, W before Midsummer day, Aug. 15, F bef Mich. day, December 10, *c.*

Prees, 2nd Monday in April and October.

Shiffnal, (Tu) 1st M in Apr., Aug. 5, Nov. 22, hrs. hops.

Shrewsbury, (S) a fair is held 2nd W in every month.

Warn, March 6.

Wattlesbury, August 5.

Wellington, (Th) March 29, June 22, Sep. 29, Nov. 17.

Wem, (Th) March 4, May 6, 20, June 20, Sep. 30, November 22, *c.*

Wenlock, (M) 2nd M in Mar, May 12, *c,* July 5, Oct. 17, December 4, *c.*

Westbury, August 5.

Whitchurch, (F) 2nd Fri in April, Whit-M., Fri after Aug. 2, Oct. 28, *c.*

Woore, April 25, Nov. 28.

Worfield, Feb. 4.

Wyken, Feb. 4.

STAFFORDSHIRE.

Abbotts Bromley, March 5, May 22, Sep. 4.

Betley, (Tu) Ap. 30, July 31, October 29.

(M S) S bef Shrove-

Whitsuntide

S bef Ember wk., Dec. 26.

Burton-upon-Trent (Th) Feb. 2, April 5, Holy Th., Oct. 29, 1st Tu in Sep, ch.

Cheadle, (F) Jan. 7, Mar. 25, Holy Th, July 4, Aug. 21, October 18, cows.

Eccleshall, (F) Th bef Midlent, Holy Th., Aug. 16, F in November, *c.*

Fazeley, 2nd M in Jan. Feb. April, Sep. Dec. 3rd M in July, Aug. Nov. last M in May, June, March 21, 1st M after Old Michaelmas.

Gnosall, May 7, Sep. 23.

Hanley, Feb. 9, March 30, May 18, cattle markets, 2nd Tu monthly.

Ipstones, March 25, Nov. 9.

Leek, (W) W before Feb. 13, W in Easter week, May 18, W in Whit week, July 3, 28, W after Oct. 10, Nov. 13, W aft Christmas day, ch., 2nd M in March and Sept., 3rd M in Nov.

Lichfield, (Tu F) Ash Wed., May 12, F in the week aft St. Simon and St. Jude, F aft Twelfth-day, ch. *c.*

Longnor, (Tu) Feb. 12, Ap. 2, May 4, 17, 21, Aug. 5, Oc. 8, November 12.

Newcastle, (M) Feb. 11, Ap. 11, May 20, July 8, Sept. 16, November 4

Newcastle-under-Lyne (M S) Fairs as fixed by the Town Council for the year 1840, Jan. 13, new market, Feb. 10, March 2, Shrove fair, March 30, Apr. 20, Easter fair, May 18, June 8, Whit M, July 13, wool fair, Aug. 10, Sept. 14, Wakes fair, Oct. 12, Nov. 2, Cold fair, December 7.

Rugeley, (Th) 3rd Th in Ap. Oct. 21, 2nd Tu in Dec. *c,* June 2, and four following days, horses.

Sandon, April 4, Nov. 14.

Shenstone, last M in Feb.

Stafford, (S) Tu bef. Shrove Tu, May 14, *c.* S before St. Peter's day, June 29, July 10, wool, Sep. 16, two following days, Dec. 4, *c.*

Stone, (Tu) Tu aft Midlent, Shrove Tu, Whit Tu, Aug. 5, *c,* Aug. 26, *c.*

Tamworth, (S) last M in Jan. 1st M in March, April 5, May 4, July 26, 1st M in Sep., Oct. 24, Dec. 15, *c.*

Tutbury, (Tu) Feb. 14, Aug. 15, December 1.

Uttoxeter (W) St. Magdalene's day, May 6, July 31, Sep. 1, 19, Nov. 11, 27.

Walsall, (Tu) Feb. 24, Tu bef Mich., horses.

JANUARY, 31 DAYS.

Moon's Changes.—Last qr., 1st, at 21m. p. 3 aft.—New M. 8th, at 13m. p. 7 m.—First qr., 15th, at 51m. p. 8 m.—Full M. 23rd, at 20m. p. 2 aft.—Last qr., 31st, at 56m. p. 1 m.

D of M	D of W	Remarkable days.	SUN. Rises. h. m.	SUN. Sets. h. m.	MOON. Rises. h. m.	MOON. Sets. h. m.	HIGH WATER. Morn. h. m.	HIGH WATER. Even. h. m.	HIGH WATER. Height ft. in.
1	W	Q. session	8 8	4 0	morn.	11 0	3 38	4 2	14 1
2	T	[*Cir.*	8 8	4 1	1 4	11 25	4 30	5 1	13 6
3	F	....	8 8	4 2	2 20	11 54	5 37	6 15	13 3
4	S	St. Titus	8 8	4 3	3 38	0 32	6 51	7 31	13 3
5	**S**	*Epiphany*	8 8	4 4	4 55	1 19	8 4	8 41	14 3
6	M	PloughM	8 7	4 5	6 5	2 19	9 13	9 42	15 9
7	T	....	8 7	4 7	7 3	3 31	10 11	10 36	17 2
8	W	Fire Ins.	8 6	4 8	7 50	4 52	11 3	11 27	18 6
9	T	[due ..	8 6	4 9	8 27	6 13	11 52	....	19 3
10	F	....	8 5	4 11	8 56	7 35	0 15	0 37	19 5
11	S	Hil. T. b.	8 5	4 12	9 21	8 53	1 0	1 23	18 10
12	**S**	*S. after E.*	8 4	4 14	9 42	10 8	1 44	2 7	17 11
13	M	Camb. T.	8 3	4 15	10 5	11 20	2 29	2 48	16 6
14	T	Oxf. T. b.	8 3	4 17	10 36	morn.	3 10	3 30	15 0
15	W	C.Colling	8 2	4 18	10 50	0 28	3 54	4 14	13 5
16	T	*d.* 1836	8 1	4 20	11 15	1 36	4 43	5 17	12 3
17	F	Bat. Fal-	8 0	4 21	11 46	2 41	5 52	6 30	11 8
18	S	kirk 1746	7 59	4 23	0 22	3 41	7 9	7 45	11 7
19	**S**	*Septuag S*	7 58	4 24	1 5	4 37	8 20	8 53	12 4
20	M	....	7 57	4 26	1 54	5 27	9 18	9 40	13 5
21	T	St. Agnes	7 56	4 28	2 51	6 9	10 5	10 23	14 5
22	W	[day ..	7 55	4 30	3 54	6 45	10 42	10 59	15 5
23	T	....	7 54	4 31	4 59	7 16	11 18	11 35	16 4
24	F	St. Timo-	7 53	4 33	6 7	7 42	11 49	....	17 0
25	S	[thy ..	7 51	4 35	7 16	8 6	0 5	0 22	17 6
26	**S**	*Saxages ..*	7 50	4 36	8 26	8 27	0 38	0 55	17 7
27	M	....	7 49	4 38	9 39	8 47	1 12	1 30	17 3
28	T	P. Great	7 47	4 40	10 53	9 8	1 49	2 9	16 9
29	W	*d.* 1725	7 46	4 42	morn.	9 30	2 30	2 49	15 10
30	T	Mar.Ch.I	7 44	4 44	0 8	9 57	3 11	3 34	14 7
31	F	HilT.end	7 43	4 45	1 24	10 31	3 59	4 28	13 7

Newcastle, (M) Feb. [illegible]

FEBRUARY, 28 DAYS.

Moon's Changes.—New Moon, 6th, at 35m. past 6 after. noon.—First qr., 14th, at 5 h. morn.—Full Moon, 22d, at 46m. past 6 morning.

D of M	D of W	Remarkable days.	SUN. Rises. h. m.	SUN. Sets. h. m.	MOON. Rises. h. m.	MOON. Sets. h. m.	HIGH WATER.* Morn. h. m.	HIGH WATER.* Even. h. m.	HIGH WATER.* height ft. in.
1	S	P. ph.sht.e	7 41	4 47	2 37	11 13	5 3	5 43	12 10
2	**S**	*Quinquag..*	7 40	4 49	3 47	0 6	6 29	7 12	12 10
3	M	[Cand. D	7 38	4 51	4 49	1 10	7 53	8 31	13 10
4	T	Shrove Tu	7 37	4 53	5 40	2 23	9 5	9 36	15 6
5	W	Ash Wed..	7 35	4 54	6 20	3 44	10 4	10 28	17 1
6	T	Dr. Priest-	7 33	4 56	6 53	5 4	10 53	11 16	18 6
7	F	ley *d.* 1804	7 32	4 58	7 21	6 24	11 37	11 56	19 3
8	S	....	7 30	5 0	7 45	7 41	....	0 17	19 7
9	**S**	*Quadrages.*	7 28	5 2	8 7	8 56	0 38	0 57	19 3
10	M	[*1 S. in L.*	7 26	5 4	8 30	10 9	1 17	1 36	18 2
11	T	[10 Queen	7 25	5 5	8 52	11 19	1 56	2 14	16 10
12	W	married.	7 23	5 7	9 17	morn.	2 33	2 51	15 2
13	T	1840....	7 21	5 9	9 46	0 26	3 11	3 31	13 5
14	F	St. Valent.	7 19	5 11	10 20	1 30	3 54	4 21	11 10
15	S	....	7 17	5 13	11 2	2 27	4 56	5 33	10 10
16	**S**	2 *S in Lt.*	7 15	5 14	11 48	3 20	6 15	7 0	11 1
17	M	Macpher-	7 13	5 16	0 42	4 5	7 37	8 15	11 6
18	T	son *d* 1796	7 11	5 18	1 41	4 44	8 48	9 15	12 8
19	W	Galileo *b*	7 9	5 20	2 46	5 17	9 38	9 59	14 1
20	T	[1564..	7 7	5 22	3 54	5 44	10 19	10 35	15 5
21	F	Jas. I. as-	7 5	5 24	5 3	6 9	10 54	11 9	16 7
22	S	[sass. 1437	7 3	5 25	6 13	6 33	11 26	11 41	17 7
23	**S**	3 *S in Lent*	7 1	5 27	7 27	6 53	11 58	....	18 3
24	M	Duke of	6 59	5 29	8 41	7 15	0 14	0 33	18 6
25	T	Cambridge	6 57	5 31	9 57	7 38	0 49	1 8	18 3
26	W	*b*1774 ..	6 55	5 33	11 12	8 6	1 26	1 45	17 6
27	T	Hare-hun	6 53	5 34	morn.	8 35	2 6	2 26	16 5
28	F	[ting ends.	6 51	5 46	0 26	9 14	2 47	3 11	14 11

* High Water at CHESTER is 40 minutes LATER.

MARCH, 31 DAYS.

Moon's Changes.—Last qr., 1st, at 13m. p 10 m.—New M. 8th, at 36m. p. 6 m.—First qr., 16th, at 53m. p. 1 m.—Full M. 23rd, at 19m. p. 8 aft.—Last qr., 30th, at 5 h. aft.

D of M	D of W	*Remarkable days.*	SUN. *Rises.* h. m.	SUN. *Sets.* h. m.	MOON. *Rises.* h. m.	MOON. *Sets.* h. m.	HIGH WATER. *Morn.* h. m.	HIGH WATER. *Even.* h. m.	HIGH WATER. *height* ft. in.
1	S	St. David.	6 46	5 50	1 38	10 1	3 39	4 8	13 3
2	**S**	4 *S in Lent*	6 44	5 42	2 39	11 0	4 45	5 27	12 4
3	M	I auditors	6 42	5 43	3 33	0 9	6 14	7 2	12 11
4	T	and asses-	6 40	5 45	4 16	1 22	7 45	8 21	13 7
5	W	sors electd	6 37	5 47	4 51	2 41	8 55	9 23	15 3
6	T	Dr Parr *d.*	6 35	5 48	5 20	3 59	9 49	10 16	16 11
7	F	[1825..	6 33	5 50	5 46	5 17	10 37	10 58	18 1
8	S	W.3 *d* 1702	6 31	5 52	6 9	6 33	11 18	11 35	18 11
9	**S**	5 *S in Lent*	6 29	5 54	6 31	7 47	11 53	....	19 2
10	M	....	6 26	5 55	6 53	9 0	0 13	0 31	18 10
11	T	Election of	6 24	5 57	7 20	10 8	0 48	1 7	18 0
12	W	guardians.	6 22	5 59	7 46	11 14	1 24	1 43	16 8
13	T	Dr Priest-	6 20	6 0	8 19	morn.	2 1	2 20	15 3
14	F	ley *b* 1733	6 17	6 2	8 58	0 14	2 37	2 56	13 7
15	S	Oxf L T *e*	6 15	6 4	9 42	1 10	3 18	3 40	11 11
16	**S**	*Palm S* ..	6 13	6 6	10 33	1 58	4 4	4 39	10 10
17	M	St Patrick	6 10	6 7	11 29	2 40	5 19	6 0	10 4
18	T	died 464...	6 8	6 9	0 31	3 15	6 44	7 26	11 3
19	W	....	6 6	6 11	1 38	3 43	8 0	8 34	12 2
20	T	Spring cm	6 4	6 12	2 47	4 10	9 0	9 24	13 9
21	F	Good F ..	6 1	6 14	3 56	4 32	9 46	10 7	15 4
22	S	....	5 59	6 16	5 9	4 56	10 23	10 41	16 8
23	**S**	Easter S..	5 57	6 17	6 24	5 17	10 57	11 15	17 10
24	M	Easter M.	5 55	6 19	7 39	5 40	11 32	11 48	18 7
25	T	Lady day.	5 52	6 21	8 57	6 6	....	0 8	18 11

APRIL, 30 DAYS.

Moon's Changes.—New Moon, 6th, at 40m. p. 7 aft.—First qr., 14th, at 23m. p. 9 aft.—Full Moon, 22nd, at 12m. p. 7 m.—Last qr., 28th, at 20m. p. 11 aft.

D of M	D of W	*Remarkable days*	SUN. *Rises.* h. m.	SUN. *Sets.* h. m.	MOON. *Rises.* h. m.	MOON. *Sets.* h. m.	HIGH WATER. *Morn.* h. m.	HIGH WATER. *Even.* h. m.	HIGH WATER. *height* ft. in.
1	T	Q. sessions	5 36	6 32	2 52	0 28	6 2	6 48	13 2
2	W	Ox. & Cam	5 34	6 34	3 22	1 45	7 30	8 5	13 8
3	T	Easter T	5 32	6 36	3 48	3 1	8 38	9 6	15 2
4	F	begin ..	5 30	6 37	4 11	4 16	9 31	9 54	16 6
5	S	....	5 27	6 39	4 34	5 28	10 17	10 38	17 5
6	**S**	2 *S after E*	5 25	6 41	4 56	6 40	10 55	11 15	18 0
7	M	....	5 23	6 42	5 20	7 50	11 33	11 49	18 1
8	T	Fire Insu-	5 21	6 44	5 47	8 58	....	0 7	17 10
9	W	rance due.	5 18	6 46	6 17	10 1	0 23	0 40	17 2
10	T	II G Can-	5 16	6 47	6 54	10 58	0 59	1 14	16 2
11	F	ning *b* 1770	5 14	6 49	7 37	11 50	1 33	1 51	15 1
12	S	....	5 12	6 51	8 25	morn.	2 10	2 30	13 9
13	**S**	3 *S after E*	5 10	6 52	9 19	0 34	2 48	3 9	12 6
14	M	....	5 7	6 54	10 19	1 12	3 34	3 59	11 5
15	T	East term	5 5	6 56	11 23	1 43	4 34	5 8	10 10
16	W	begins..	5 3	6 57	0 27	2 10	5 49	6 29	11 9
17	T	Oxford &	5 1	6 59	1 37	2 34	7 5	7 37	12 3
18	F	Cambridg	4 59	7 1	2 48	2 57	8 7	8 37	13 6
19	S	term beg	4 57	7 2	4 0	3 18	9 1	9 25	14 11
20	**S**	4 *S after E*	4 55	7 4	5 16	3 40	9 45	10 7	16 2
21	M	Bp Heber	4 53	7 5	6 34	4 5	10 26	10 46	17 5
22	T	*b* 1783 ..	4 51	7 7	7 53	4 34	11 7	11 26	18 3
23	W	St George	4 49	7 9	9 10	5 10	11 45	....	18 8
24	T	Olr Crom-	4 47	7 10	10 21	5 53	0 7	0 28	18 7
25	F	well *b* 1599	4 45	7 12	11 22	6 47	0 49	1 14	17 10

MAY, 31 DAYS.

***Moon's Changes.*—New Moon, 6th, at 58m. p. 9 m.—First qr., 14th, at 9m. p. 2 aft.—Full Moon, 21st, at 58m. p. 3 aft.—Last qr., 28th, at 25m. p. 6 m.**

D of M	D of W	*Remarkable days*	SUN.		MOON.		HIGH WATER.		
			Rises. h. m.	*Sets.* h. m.	*Rises.* h. m.	*Sets.* h. m.	*Morn.* h. m.	*Even.* h. m.	*height* ft. in.
1	T	*Ascension*	4 33	7 22	2 16	2 4	6 59	7 37	13 11
2	F	Union wth	4 31	7 23	2 39	3 16	8 5	8 38	14 8
3	S	Scotd 1707	4 29	7 25	3 1	4 27	9 3	9 27	15 6
4	**S**	*S after Asc*	4 28	7 27	3 24	5 37	9 50	10 12	16 1
5	M	Bonaparte	4 26	7 28	3 49	6 44	10 32	10 52	16 6
6	T	died 1821	4 24	7 30	4 18	7 49	11 10	11 28	16 8
7	W	....	4 22	7 31	4 53	8 49	11 46	....	16 6
8	T	East *t* end	4 21	7 33	5 32	9 42	0 3	0 19	16 3
9	F	Schiller *d*	4 19	7 35	6 18	10 30	0 36	0 54	15 7
10	S	1805	4 17	7 36	7 10	11 10	1 11	1 30	14 10
11	**S**	*Whit Sun*	4 16	7 38	8 9	11 43	1 48	2 7	14 0
12	M	El Stafford	4 14	7 39	9 9	morn.	2 27	2 50	13 2
13	T	beh 1641	4 13	7 41	10 14	0 12	3 10	3 32	12 4
14	W	Oxfd Trin	4 11	7 42	11 19	0 36	3 59	4 25	11 10
15	T	Whitsun *t*	4 10	7 44	0 28	0 58	4 57	5 34	11 9
16	F	Juries ins.	4 8	7 45	1 38	1 18	6 9	6 40	12 9
17	S	970 ..	4 7	7 47	2 51	1 42	7 11	7 44	13 4
18	**S**	*Trinity S*	4 5	7 48	4 6	2 4	8 10	8 38	14 5
19	M	.. ..	4 4	7 49	5 24	2 31	9 4	9 29	15 8
20	T	....	4 3	7 51	6 44	3 3	9 54	10 18	16 9
21	W	....	4 1	7 52	8 0	3 42	10 39	11 7	17 7
22	T	Trin *t* beg	4 0	7 54	9 7	4 32	11 27	11 52	18 2
23	F	....	3 59	7 55	10 4	5 34	....	0 15	18 3
24	S	Q V *b* 1819	3 58	7 56	10 50	6 45	0 38	1 3	17 10
25	**S**	1 *S after T*	3 57	7 57	11 26	8 3	1 31	1 57	16 10
26	M	Augustine	3 56	7 59	11 56	9 22	2 24	2 49	15 8
27	T	28 Davy *d*	3 55	8 0	morn.	10 40	3 17	3 45	14 3
28	W	1829 ..	3 54	8 1	0 22	11 54	4 15	4 47	13 5
29	T	Res K C II	3 53	8 2	0 44	1 8	5 17	5 55	12 11
30	F	Rubens *d*	3 52	8 3	1 7	2 19	6 26	6 54	13 9
31	S	1640 ..	3 51	8 5	1 29	3 39	7 29	7 59	13 10

JUNE, 30 DAYS.

Moon's Changes.—New Moon, 5th, at 8m. past 1 m.—Frst qr., 13th, at 43m. p. 3 m.—Full Moon, 19th, at 18m. p. 11 aft.—Last qr., 26th, at 27m. p. 3 aft.

D of M	D of W	*Remarkabie days.*	SUN.		MOON.		HIGH WATER.		
			Rises. h. m.	*Sets.* h. m.	*Rises.* h. m.	*Sets.* h. m.	*Morn.* h. m.	*Even.* h. m.	*height* ft. in.
1	**S**	2 *S after T*	3 50	8 6	1 53	4 35	8 29	8 56	14 3
2	M	....	3 49	8 7	2 21	5 41	9 23	9 46	14 8
3	T	Oxf *t* ends	3 49	8 8	2 54	6 41	10 10	10 30	15 0
4	W	(5) K Han	3 48	8 9	3 30	7 37	10 51	11 10	15 4
5	T	*b* 1771 .	3 48	8 10	4 14	8 27	11 29	11 44	15 5
6	F	.. ..	3 47	8 10	5 4	9 10	....	0 1	15 5
7	S	Oxf *t* beg.	3 46	8 11	6 0	9 44	0 18	0 34	15 3
8	**S**	3 *S after T*	3 46	8 12	7 0	10 16	0 52	1 10	15 0
9	M	Dalrympl	3 46	8 13	8 5	10 40	1 28	1 46	14 6
10	T	*d* 1808	3 45	8 14	9 8	11 3	2 6	2 25	14 0
11	W	St Barnab	3 45	8 14	10 14	11 21	2 45	3 6	13 6
12	T	Trin *t* end	3 45	8 15	11 21	11 45	3 28	3 51	12 11
13	F	Edgeworth	3 44	8 15	0 31	morn.	4 16	4 45	12 7
14	S	*d* 1817	3 44	8 16	1 43	0 8	5 16	5 50	12 9
15	**S**	4 *S after T*	3 44	8 16	2 59	0 30	6 22	6 52	13 3
16	M	Printing	3 44	8 17	4 16	0 58	7 27	7 59	13 11
17	T	invd 1440	3 44	8 17	5 33	1 32	8 28	8 58	15 0
18	W	Bat of Wa-	3 44	8 18	6 45	2 17	9 28	9 54	16 0
19	T	terloo 1815	3 44	8 18	7 49	3 12	10 22	10 46	16 11
20	F	Queen's ac	3 44	8 18	8 42	4 19	11 14	11 38	17 8
21	S	Summer *c*	3 45	8 18	9 23	5 35	....	0 4	18 1
22	**S**	5 *S after T*	3 45	8 19	9 57	6 58	0 27	0 52	17 11
23	M	(21) long	3 45	8 19	10 25	8 19	1 17	1 44	17 3
24	T	est d Mid.	3 46	8 19	10 49	9 37	2 10	2 34	16 2
25	W	....	3 46	8 19	11 12	10 54	2 58	3 24	15 0
26	T	Liverpool	3 46	8 19	11 36	0 7	3 48	4 15	13 11
27	F	taken 1644	3 47	8 19	11 59	1 18	4 42	5 10	13 0
28	S	Q's coron	3 47	8 18	morn.	2 27	5 45	6 16	12 6
29	**S**	6 *S after T*	3 48	8 18	0 25	3 33	6 47	7 22	12 10
30	M	[St Peter	3 48	8 18	0 55	4 36	7 56	8 28	12 10

JULY, 31 DAYS.

***Moon's Changes.*—New Moon, 4th, at 30m. past 4 aft.—First qr., 12th, at 22m. p. 2 aft.—Full Moon, 19th, at 3m. p. 6 m.—Last qr., 26th, at 20m. p. 3 m.**

D of M	D of W	*Remarkable days*	SUN.		MOON.		HIGH WATER.		
			Rises. h. m.	*Sets.* h. m.	*Rises.* h. m.	*Sets.* h. m.	*Morn.* h. m.	*Even.* h. m.	*height* ft. in.
1	T	Bat Boyne	3 49	8 17	1 30	5 33	8 57	9 22	13 5
2	W	[1690	3 50	8 17	2 13	6 25	9 46	10 9	13 10
3	T	Dog days *b*	3 51	8 17	3 0	7 9	10 30	10 50	14 4
4	F	Cam *t* ends	3 51	8 16	3 54	7 48	11 8	11 26	14 10
5	S	Game cer *e*	3 52	8 16	4 52	8 19	11 43	11 59	15 3
6	**S**	7 *S after T*	3 53	8 15	5 54	8 47	....	0 17	15 6
7	M	....	3 54	8 15	6 59	9 9	0 30	0 48	15 6
8	T	Fire Ins.	3 55	8 14	8 4	9 32	1 6	1 22	15 4
9	W	[due ..	3 56	8 13	9 12	9 52	1 40	2 1	15 1
10	T	Calvin *b*	3 57	8 12	10 20	10 13	2 20	2 39	14 7
11	F	[1509..	3 58	8 12	11 29	10 35	2 58	3 19	14 0
12	S	....	3 59	8 11	0 40	11 0	3 43	4 6	13 5
13	**S**	8 *S after T*	4 0	8 10	1 54	11 29	4 34	5 4	13 1
14	M	....	4 1	8 9	3 8	morn.	5 40	6 15	13 3
15	T	Swithin ..	4 3	8 8	4 22	0 8	6 49	7 30	13 4
16	W	Sir J Rey-	4 4	8 7	5 29	0 55	8 2	8 38	14 1
17	T	nolds born	4 5	8 6	6 27	1 55	9 12	9 40	15 4
18	F	1723	4 6	8 5	7 15	3 7	10 11	10 35	16 6
19	S	....	4 8	8 4	7 53	4 26	11 4	11 27	17 7
20	**S**	9 *S after T*	4 9	8 2	8 24	5 50	11 52	....	18 3
21	M	Bat of Vit-	4 10	8 1	8 52	7 13	0 14	0 38	18 4
22	T	toria 1813	4 12	8 0	9 16	8 32	0 59	1 24	17 8
23	W	Gibraltar	4 13	7 59	9 39	9 48	1 45	2 12	16 10
24	T	taken 1704	4 14	7 57	10 3	11 3	2 32	2 52	15 7
25	F	Duch Cam	4 16	7 56	10 28	0 14	3 15	3 38	14 2
26	S	*b* 1797 ..	4 17	7 54	10 59	1 22	4 2	4 26	13 0
27	**S**	10 *S after T*	4 18	7 53	11 32	2 26	4 56	5 29	12 3

AUGUST, 31 DAYS.

***Moon's Changes.*—New Moon, 3rd, at 25m. past 7 m.—First qr., 10th, at 41m. past 10 aft.—Full Moon, 17th, at 17m. p. 1 aft.—Last qr., 24th, at 27m. p. 6 aft.**

D of M	D of W	*Remarkable days*	SUN.		MOON.		HIGH WATER.		
			Rises. h. m.	*Sets.* h. m.	*Rises.* h. m.	*Sets.* h. m.	*Morn.* h. m.	*Even.* h. m.	*heigh* ft. in.
1	F	Lammas	4 26	7 45	2 46	6 22	10 9	10 31	14 0
2	S	[day ..	4 27	7 43	3 48	6 50	10 48	11 6	14 9
3	**S**	11 *S after T*	4 29	7 42	4 51	7 15	11 25	11 38	15 6
4	M	(5) Gowrie	4 30	7 40	5 56	7 38	11 53	....	16 0
5	T	cons. 1600	4 32	7 38	7 3	7 59	0 10	0 25	16 6
6	W	Prince Al-	4 33	7 37	8 10	8 22	0 40	0 57	16 6
7	T	fred *b* 1844	4 35	7 35	9 19	8 42	1 15	1 32	16 2
8	F	G Canning	4 37	7 33	10 29	9 7	1 50	2 11	15 10
9	S	*d* 1827	4 38	7 31	11 42	9 33	2 30	2 51	15 1
10	**S**	12 *S after T*	4 40	7 29	0 55	10 7	3 13	3 35	14 1
11	M	Dog days *e*	4 41	7 27	2 6	10 48	4 2	4 34	13 3
12	T	Grouse sh.	4 43	7 25	3 14	11 41	5 6	5 47	13 0
13	W	Q Adelaide	4 44	7 24	4 13	morn.	6 29	7 11	12 7
14	T	*b* 1792	4 46	7 22	5 5	0 45	7 52	8 29	13 4
15	F	Bonaparte	4 48	7 20	5 46	1 58	9 1	9 32	14 10
16	S	*b* 1769	4 49	7 18	6 20	3 20	10 1	10 26	16 4
17	**S**	13 *S after T*	4 51	7 16	6 50	4 41	10 49	11 14	17 7
18	M	(17) Duch	4 52	7 14	7 16	6 3	11 34	11 56	18 4
19	T	Knt *b* 1786	4 54	7 12	7 40	7 24	....	0 18	18 7
20	W	Blk gm sh	4 56	7 9	8 6	8 40	0 39	0 59	18 3
21	T	Lady Mon	4 57	7 7	8 32	9 54	1 20	1 39	17 3
22	F	tagu *d* 1762	4 59	7 5	9 0	11 5	1 59	2 21	16 0
23	S	....	5 0	7 3	9 32	0 14	2 39	3 2	14 8
24	**S**	14 *S after T*	5 2	7 1	10 10	1 16	3 22	3 47	13 2
25	M	Watt *d* 1829	5 4	7 59	10 54	2 12	4 10	4 39	12 1
26	T	Pr Albert	5 5	7 57	11 43	3 2	5 18	5 55	11 6
27	W	*b* 1819 ..	5 7	6 55	morn.	3 45	6 35	7 15	10 9

p. 10 aft.—Last qr., 23rd, at 26m. p. noon.

D of M	D of W	Remarkable days	SUN. Rises. h.	SUN. Rises. m.	SUN. Sets. h.	SUN. Sets. m.	MOON. Rises. h.	MOON. Rises. m.	MOON. Sets. h.	MOON. Sets. m.	HIGH WATER. Morn. h.	HIGH WATER. Morn. m.	HIGH WATER. Even. h.	HIGH WATER. Even. m.	HIGH WATER. height ft.	HIGH WATER. height in.
1	M	Partg sh *b*	5	15	6	44	4	53	6	5	10	57	11	14	15	9
2	T	London	5	16	6	41	6	0	6	27	11	30	11	45	16	7
3	W	burnt 1666	5	18	6	39	7	9	6	48	....		....		17	3
4	T	....	5	19	6	37	8	19	7	12	0	16	0	33	17	6
5	F	Malta ta-	5	21	6	45	9	32	7	39	0	49	1	8	17	4
6	S	[ken 1800	5	23	6	32	10	44	8	11	1	26	1	45	16	9
7	**S**	16 *S after T*	5	24	6	30	11	56	8	49	2	5	2	26	15	10
8	M	Nativity of	5	26	6	28	1	3	9	37	2	48	3	12	14	8
9	T	[V Mary	5	27	6	26	2	4	10	34	3	39	4	10	13	7
10	W	Mun Park	5	29	6	23	2	57	11	42	4	44	5	27	13	1
11	T	*b* 1771 ..	5	31	6	21	3	40	morn.		6	14	6	58	12	3
12	F	Bat Aber-	5	32	6	12	4	18	0	58	7	40	8	17	13	0
13	S	deen, 1644	5	34	6	16	4	48	2	17	8	51	9	20	14	6
14	**S**	17 *S after T*	5	35	6	14	5	15	3	38	9	47	10	12	16	0
15	M	Liver and	5	37	6	12	5	41	4	55	10	34	10	55	17	4
16	T	Manc rail-	5	39	6	9	6	7	6	14	11	17	11	35	18	3
17	W	way *o* 1830	5	40	6	7	6	32	7	30	11	55	....		18	5
18	T	S Johnson	5	42	6	5	7	0	8	44	0	14	0	33	18	3
19	F	*b* 1709..	5	43	6	3	7	31	9	55	0	52	1	13	17	6
20	S	....	5	45	6	0	8	8	11	0	1	31	1	50	16	5
21	**S**	18 *S after T*	5	47	5	58	8	50	0	0	2	8	2	27	15	2
22	M	Chas V *d*	5	48	5	56	9	36	0	54	2	46	3	6	13	8
23	T	1588 ..	5	50	5	53	10	29	1	40	3	31	3	55	12	4
24	W	(23) Autm	5	52	5	51	11	28	2	19	4	24	5	4	11	6
25	T	....	5	53	5	49	morn.		2	52	5	43	6	25	10	7
26	F	L Colling-	5	55	5	46	0	29	3	20	7	4	7	40	10	9
27	S	wood *b* 1748	5	56	5	44	1	32	3	44	8	13	8	46	11	9
28	**S**	19 *S after T*	5	58	5	42	2	39	4	8	9	10	9	31	13	3
29	M	Michaelm	6	0	5	40	3	46	4	30	9	51	10	9	14	6
30	T	day	6	1	5	37	4	54	4	52	10	27	10	43	15	10

10th, at 56m. p. 9 m.—First

Last qr. 23d, at 14m. p. 8 m.—New M. 30th, at 42m. p. 11 aft.

D of M	D of W	Remarkable days	SUN. Rises. h.	SUN. Rises. m.	SUN. Sets. h.	SUN. Sets. m.	MOON. Rises. h.	MOON. Rises. m.	MOON. Sets. h.	MOON. Sets. m.	HIGH WATER. Morn. h.	HIGH WATER. Morn. m.	HIGH WATER. Even. h.	HIGH WATER. Even. m.	HIGH WATER. height ft.	HIGH WATER. height in.
1	W	Pheas sh *b*	6	3	5	35	6	5	5	16	11	1	11	19	16	10
2	T	Zante ta-	6	5	5	33	7	8	5	42	11	35	11	51	17	8
3	F	ken 1809	6	6	5	31	8	33	6	13	....		0	10	18	2
4	S	....	6	8	5	28	9	45	6	49	0	28	0	46	18	1
5	**S**	20 *S after T*	6	10	5	26	10	54	7	37	1	7	1	27	17	6
6	M	....	6	11	5	24	11	58	8	32	1	48	2	12	16	7
7	T	Peace Aix	6	13	5	22	0	53	9	35	2	37	3	2	15	5
8	W	la-Chap	6	15	5	19	1	40	10	47	3	30	3	58	14	1
9	T	1748 ..	6	16	5	17	2	18	morn.		4	33	5	15	13	5
10	F	Ox & Cam	6	18	5	15	2	50	0	2	5	59	6	43	12	4
11	S	*t* begin	6	20	5	13	3	17	1	20	7	24	8	10	12	9
12	**S**	21 *S after T*	6	21	5	11	3	43	2	37	8	32	9	2	14	2
13	M	(14) Con-	6	23	5	8	4	8	3	52	9	26	9	51	15	7
14	T	quest 1066	6	25	5	6	4	33	5	8	10	15	10	35	16	8
15	W	A Ramsay	6	27	5	4	5	0	6	22	10	56	11	16	17	5
16	T	*b* 1686 ..	6	28	5	2	5	29	7	34	11	34	11	51	17	10
17	F	16 Hs Parl	6	30	5	0	6	4	8	43	....		0	11	17	9
18	S	burnt 1834	6	32	4	58	6	43	9	46	0	29	0	46	17	5
19	**S**	22 *S after T*	6	33	4	56	7	29	10	42	1	5	1	22	16	6
20	M	(19) Swift	6	35	4	54	8	19	11	32	1	42	2	0	15	6
21	T	*d* 1745 ..	6	37	4	52	9	17	0	14	2	21	2	39	14	4
22	W	....	6	39	4	50	10	15	0	50	3	0	3	23	13	2
23	T	Irish Reb-	6	40	4	48	11	18	1	21	3	47	4	14	12	2
24	F	ellion 1641	6	42	4	46	morn.		1	47	4	49	5	27	11	9
25	S	....	6	44	4	44	0	22	2	10	6	5	6	42	10	11
26	**S**	23 *S after T*	6	46	4	42	1	28	2	31	7	17	7	51	11	4
27	M	Capt Cook	6	48	4	40	2	35	2	54	8	19	8	49	12	9
28	T	*b* 1728 ..	6	49	4	38	3	45	3	17	9	9	9	29	14	3
29	W	Hare hunt	6	51	4	36	4	57	3	42	9	50	10	12	15	6
30	T	Tr London	6	53	4	34	6	11	4	11	10	31	10	50	16	9
31	F	burnt 1841	6	55	4	32	7	26	4	47	11	10	11	29	17	7

NOVEMBER, 30 DAYS.

Moon's Changes.—First qr., 6th, at 15m. p. 6 aft.—Full Moon, 14th, at 55m. p. midnight.—Last qr., 22nd, at 26m. p. 4 m.—New Moon, 29th, at 41m. p. 11 m.

D of M	D of W	*Remarkable days*	SUN. *Rises.* h. m.	SUN. *Sets.* h. m.	MOON. *Rises.* h. m.	MOON. *Sets.* h. m.	HIGH WATER. *Morn.* h. m.	HIGH WATER. *Even.* h. m.	*height* ft. in.
1	S	All Saints	6 55	4 32	8 40	5 30	11 48	....	18 3
2	**S**	24 *SafterT*	6 56	4 30	9 49	6 24	0 9	0 31	18 5
3	M	Pr Sophia	6 58	4 29	10 49	7 27	0 52	1 15	18 0
4	T	*b* 1777 ..	7 0	4 27	11 39	8 38	1 39	2 4	17 3
5	W	Gunpowd	7 2	4 25	0 20	9 53	2 29	2 55	16 2
6	T	Plot 1605	7 4	4 23	0 53	11 10	3 22	3 51	14 10
7	F	9Pr Wales	7 5	4 22	1 20	morn.	4 25	4 58	14 2
8	S	*b* 1841 ..	7 7	4 20	1 46	0 26	5 40	6 19	13 11
9	**S**	25 *SafterT*	7 9	4 19	2 12	1 41	6 55	7 32	12 10
10	M	Luther *b*	7 11	4 17	2 35	2 54	8 4	8 35	13 8
11	T	1483	7 12	4 15	3 1	4 7	9 4	9 28	14 9
12	W	Rd Baxter	7 14	4 14	3 28	5 19	9 52	10 14	15 6
13	T	*b* 1605 ..	7 16	4 12	4 1	6 28	10 35	10 55	16 5
14	F	15 Fire in	7 18	4 11	4 39	7 33	11 16	11 34	16 10
15	S	Edin 1824	7 19	4 10	5 22	8 32	11 52	....	17 0
16	**S**	26*SafterT*	7 21	4 8	6 11	9 25	0 10	0 26	16 11
17	M	Oxf Mich.	7 23	4 7	7 5	10 10	0 43	1 2	16 5
18	T	*t* ends ..	7 25	4 6	8 4	10 48	1 19	1 38	15 8
19	W	....	7 26	4 4	9 5	11 21	1 57	2 17	15 0
20	T	LHawke's	7 20	4 3	10 8	11 48	2 35	2 55	14 1
21	F	victy 1759	7 31	4 2	11 13	0 13	3 17	3 38	13 2
22	S	Cecilia ..	7 33	4 1	morn.	0 34	4 3	4 34	12 7
23	**S**	27 *SafterT*	7 34	4 0	0 17	0 56	5 5	5 42	12 5
24	M	....	7 36	3 59	1 25	1 12	6 16	6 47	11 9
25	T	Mich *t* end	7 38	3 58	2 34	1 41	7 21	7 53	12 5
26	W	27 Postoffi	7 39	3 57	3 47	2 8	8 21	8 48	13 8
27	T	estab 1560	7 31	3 56	5 0	2 40	9 13	9 38	15 1
28	F	Bat Pent	7 42	3 55	6 16	3 20	10 2	10 25	16 4
29	S	land 1666	7 48	3 54	7 28	4 9	10 47	11 12	17 6
30	**S**	*Advt* St An	7 44	3 54	8 34	5 9	11 32	11 54	18 4

DECEMBER, 31 DAYS.

Moon's Changes.—First qr., 6th, at 52m. p. 2 m.—Full Moon, 13th, at 43m. p. 6 aft.—Last qr., 21st, at 27m. p. 11 aft.—New Moon, 28th, at 53m. p. 10 aft.

D of M	D of W	*Remarkable days*	SUN. *Rises* h. m.	SUN. *Sets.* h. m.	MOON. *Rises.* h. m.	MOON. *Sets.* h. m.	HIGH WATER. *Morn.* h. m.	HIGH WATER. *Even.* h. m.	*hght.* ft. in.
1	M	Pope Leo	7 45	3 53	9 31	6 21	....	0 18	18 10
2	T	X *d* 1521	7 47	3 52	10 17	7 37	0 41	1 4	18 8
3	W	2 Bat Aus-	7 48	3 52	10 55	8 56	1 30	1 54	18 0
4	T	terlitz 1805	7 49	3 51	11 25	10 15	2 25	2 47	17 0
5	F	Macbeth	7 51	3 51	11 53	11 30	3 15	3 40	15 9
6	S	slain, 1056	7 52	3 50	0 17	morn.	4 9	4 39	14 8
7	**S**	2 *S in Advt*	7 53	3 50	0 40	0 45	5 12	5 46	14 0
8	M	9 Washing	7 54	3 50	1 5	1 58	6 22	6 55	12 9
9	T	ton *d* 1799	7 55	3 49	1 32	3 10	7 32	8 4	13 1
10	W	Grouse sh	7 57	3 49	2 2	4 17	8 36	9 4	13 10
11	T	ends	7 58	3 49	2 37	5 23	9 29	9 53	14 8
12	F	Cromwell	7 59	3 49	3 18	6 23	10 16	10 36	15 4
13	S	Prot 1653.	8 0	3 49	4 4	7 19	10 56	11 17	16 0
14	**S**	3 *S in Advt*	8 0	3 49	4 57	8 7	11 34	11 50	16 5
15	M	Calico intr	8 1	3 49	5 54	8 49	....	0 9	16 7
16	T	Brit 1772	8 2	3 49	6 54	9 23	0 24	0 41	16 6
17	W	Ox Mic *t e*	8 3	3 49	7 56	9 50	1 9	1 16	16 2
18	T	17 Davy *b*	8 4	3 49	9 0	10 18	1 35	1 53	15 7
19	F	1779	8 4	3 50	10 3	10 38	2 9	2 30	15 0
20	S	Corp 1661	8 5	3 51	11 9	11 1	2 48	3 7	14 4
21	**S**	4 *S in Advt*	8 6	3 51	morn.	11 21	3 28	3 50	13 7
22	M	21 Winter *c*	8 6	3 51	0 16	11 44	4 14	4 42	13 0
23	T	Arkwright	8 7	3 52	1 25	0 7	5 17	5 52	12 10
24	W	*b* 1732 ..	8 7	3 53	2 36	0 35	6 27	7 0	12 5
25	T	Christmas	8 7	3 53	3 49	1 11	7 36	8 7	13 2
26	F	St Stephen	8 8	3 54	5 2	1 54	8 41	9 8	14 7
27	S	St John..	8 8	3 55	6 12	2 47	9 35	10 3	16 0
28	**S**	1 *SafterCh*	8 8	3 56	7 14	3 54	10 28	10 51	17 5
29	M	Earl Staf.	8 8	3 56	8 7	5 9	11 17	11 41	18 7
30	T	ford execd	8 8	3 57	8 50	6 31	....	0 5	19 4
31	W	1680	8 8	3 58	9 22	7 56	0 28	0 52	19 6

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THE BRITISH CULTIVATOR

AND AGRICULTURAL REVIEW.

JANUARY—1845.

THE CONVERTIBLE SYSTEM OF HUSBANDRY.

HE fact that large portions of the soil of st English counties do not produce one-lf what they are capable of producing is coming every day more and more appar- t. The causes of the delay, in bringing ch portions of the soil to the state of pro- ctiveness in which they ought to be, are nd in the necessity which in some cases ists for pasturage, and in the opinion hich is entertained by many that *old pas- re* is a condition of the soil which ought ot, unless under very peculiar circum- nces, to be changed, and still more, in e habit in which many farmers are prone indulge, of preferring to turn out their ve stock, often at highly improper seasons, graze, when it is well ascertained that a uch larger number of such stock can be aintained from the same extent of land hen they are properly house fed, and by onsequence, that a larger amount of profit an be obtained from such land. We pro- ose then to examine how these causes perate.

The real value of a rotation of crops is, in a great measure, lost, where a large proportion of pasture, particularly of old pasture, prevails. *An old pasture which produces an abundant herbage through an average of seasons, of a sweet and nutritious character, is undoubtedly, as such, an exceedingly valuable piece of land, and the owner or lessee of it would act unwisely in breaking it up or converting it to the condition of arable, until he had satisfied himself that the profits to be derivable from it in its arable state would, during a number of years, upon the whole, be greater than the profits it would yield in its condition of old pasture, for the same number of years.* By profits, we mean, nett profits after the payment of all the expenses in either case. But how much land is there in every county which at this moment passes for old pasture, that is really of little or no value as such? Now it is to this description of land we would at present call the attention of our readers.

Where a soil is of a light sandy nature, absorbing almost any given quantity of manure, and yet making comparatively but little return for it, the plough is a forbidden implement because, when turned up, every wind which blows scatters it, after the sun has parched it thoroughly, and you are said to be in danger of losing the soil altogether, and of having nothing left but the sub-sand. The ancient mode of dealing with such land was to get it covered with herbage, no matter of what quality, as quickly as possible, and to keep it so as permanent pasture; and the better the herbage you had from it the better farmer you were considered: but in such cases both the quantity and quality of the herbage was miserable to a degree. Yet was it not by any means to be converted to arable for the reasons before given. The late Lord Leicester was the first to prove the absurdity of this state of things, and the improvement which took place in the value of his estates particularly, and of the county of Norfolk generally, has placed the plough in a prominent position as the improver of such soils. Where, on the other hand, a soil is of a heavy and retentive nature—where the clay is within three, or at most four, inches of the surface—where manure actually perishes in the excessive moisture of the soil, the plough is a forbidden implement, because the clay which lies immediately under the soil has seldom fertilizing properties, and on being turned up with the furrow slice but fills the ground with thistles and other pernicious weeds; and being exposed to the sun and air bakes so hard as almost to defy the culture of anything better than the coarse grass with which the practice too often is to allow it remain covered as permanent pasture, the most important and frequent improvement being the application of bone dust, which certainly has upon such land a wonderful and permanent effect.

Some intelligent men, however, who are not fettered with prohibitory clauses in the leases by which they are protected, have taken the only means by which such soils can be really and permanently improved, and, at the same time, made to produce all they are capable of, viz., by converting them to arable—by draining [illegible] ploughing—by clean well-worked [illegible] and ultimately by the growth of [illegible]: for it is a fact within our own [illegible] soil which in its un-[illegible] permanent pasture, on [illegible] thirteen years ago, [illegible]

propriety be termed soil is now com
ploughed to the depth of eight inches
much deeper, and has produced mo
cellent crops of Swedish turnips,
have always the advantage over tl
the same kind grown upon lighter soi
they will stand the winter better,
frequently in a hard sound state
month of June. By the convertible
of husbandry then we must be und
at present to mean the bringing into
of all those soils which, as permane
ture, are at present a positive loss
the owner and occupier; for if th
not maintain as much stock as they
made to do they are losing to the
the difference between the keep
stock they now maintain and that
they may be made to maintain. Th
lord being, at the same time, the
the difference, in value to rent, bet
soil of three inches and one of eight
We would call the attention, there
both landlords and tenants to the q

Have you on your farms any l
pasture which may be improved b
converted to arable, and made mo
ductive of either grass, grain, o
crops, than they now are?

If you are under the slightest im
that you have, set about the calcul
once of the present profits, on an
of (say) fifteen years—set this aga
fair calculable profits of such land
growing artificial grasses, grain, an
crops, the grasses being mown ei
hay or soiling, and of course well m
and if the calculation does not affor
of our position, that the produce fr
land may be doubled, the land itsel
at the same time, greatly increased i
we shall be inclined to doubt wheth
is such a thing as AGRICULTURAL I
MENT.

◆

DEBENHAM FARMERS' CLUB.—M
FOR 1845.—First, January 17th, on
Manures.

RICULTURAL CHEMISTRY.

YON PLAYFAIR, at the late general g of the Royal Agricultural Society gland, delivered two lectures in the e of the British Institution. We another column the substance of cond lecture, which was the most al of the two. The mysteries of hidden in the soil, are as yet but y explored. Agricultural chemistry infancy, and practical experiment ften at variance with theory, which cases falls short of opening up the uses of the effects we daily witness— re, "the soundest maxims of good dry," or those which have hitherto eceived as such, upon the faith of l exposition, have been more than ontradicted by circumstances, and ead us to the conclusion either that umstances have not been carefully or that the results of them are often given. We are led to these re- by the appearance of a paper in a umber of the *Gardeners' Chronicle*, "Agricultural Experiment," from we quote the following:—

results of the next experiment were re paradoxical, and contradict one of the t maxims of good husbandry: it was a field of very inferior quality, the being high, and the soil shallow: the measured in each case was 6 perches.

	Straw per acre. truss.	lbs.	Corn per acre. bshls.	gls.	Weight per bshl. lbs.
illed and harrowed..	36	10	26	5	62
illed and horsehoed..	39	22	28	2	63
illed and handhoed..	40	—	28	7	63
illed but not hoed ..	40	—	33	1	63
adcast	60	26	46	—	62

then, the less the ground was stirred ter was the quantity of corn which it d; a conclusion so contrary to reason erience, that it can only be considered ption to ordinary rules, and refered *to explained cause;* but it is again to be d, that the increased quantity of the st corn was obtained at the expence of ity."

e *"unexplained causes" are what the aid of science to unravel for us.* We have no right whatever to assume that Mr. Vernon Harcourt, in the instance before us, by any means coaxed his experiment to the result he gives, or that such result is unfairly given: if, however, the drilled wheats in the above table were injured by birds or vermin of any kind, whilst the broadcast escaped, the paradox is explained. Mr. Harcourt's experiment would have been much more satisfactory had he stated the quantity of seed—the appearance of the plants as to tillering and general growth, and whether any perceivable cause was at work to account for the result. It is not, however, the result of one such experiment, however carefully noted, which will determine the relative values of two systems in agriculture—there are too many and such various hidden causes operating upon everything relating to the productions of the soil, without reference to those which are patent to every observer, that nothing short of a series of experiments, conducted with the greatest care, and the results noticed with the utmost precision, aided too by the most scientific research, can or ought to satisfy the practical farmer that theory is right in its conclusions, or even that practice will, upon an average of cases and of seasons, afford the same results. Still science is aiding us very materially, and will, no doubt proceed to lay bare most of those causes so long hidden under the mysterious veil of nature. Did the advantage of the drill system rest upon the mere assertion of scientific men, the result of Mr. Vernon Harcourt's experiment would lead many practical farmers to doubt its value, whilst many more would crack their dull stale jokes about "book farming;" but as that system was first sanctioned by practice, science merely stepping in to explain to the farmer how it is that nature operates in affording, in every case that we have ever yet heard of, before the present and one other, a greater return from drilled crops than from those sown broad cast.

ON LEASES.

At the late meeting of the Stewponey Farmers' Club a very excellent paper by Mr. Maughan was read, on the subject of *Leases as compared with yearly occupations*. As it is one of the best expositions of the subject we have yet met with, we regret that we have not room to transfer it to our columns at length. We may observe, however, that the result of Mr. Maughan's disquisition is to shew that a general granting of leases—an indiscriminate creation of tenant terms is of but little value to the tenant, and a positive injury to the landlord.

Mr. M. quotes, in illustration of his position, thirteen instances upon an estate in Cheshire, formerly the property of the late Sir Thomas Mostyn, where leases were granted for 21 years, the rents fluctuating with the price of cheese. Two only out of the whole number availed themselves of the advantages which their leases afforded them, and proceeded in a course of valuable improvement of their farms. Upon one of these leaseholds an outlay of £10 to £12 an acre in draining, and the application of bone dust to the pastures has been met by a return the most satisfactory, inasmuch as the quantity of cheese made upon it has been quadrupled. Upon the other farm, where a similar course of improvement was adopted, the number of cows kept has been exactly doubled without reckoning other stock, the return in cheese being no doubt increased in a still greater proportion as it must be evident that double the number of well fed cows will of necessity throw off a greater relative amount of profit than the previous number of ill-fed beasts. After quoting these instances of neglect on the part of eleven tenant farmers out of thirteen from the want either of capital or skill or both, Mr. M. proceeded—

> "If individuals who advocate leases imagine *that material* advantage would ensue from the *granting of leases indiscriminately*, those *individuals* labour under great mistake. There *must* be *a great* disturbance of the present *occupiers*—a great severing of old connections, and a great uprooting of old attachments, if the system of leasing is to be suddenly attempted with a view to national and to individual benefit. Landlords cannot, with common prudence, demise their estates for a long term of years, and accept the covenants of parties who have nothing to lose, and who if they had leases to-morrow, would not be able to turn them to the least advantage. In reference to the length of leases, 1 think where much improvement is to be made, our English term of 21 years, or the Scotch term of 19 years, very fair. If a farm, when leased, be in good condition, there is less necessity for extraordinary outlay, and consequently less necessity for the security of a lease which extraordinary outlay requires. In many case, however, where outlay is to be made by the tenant, a lease for years certain, and afterwards from year to ye and until a two years' notice to quit be give would afford perfect security to the tenant, a would be conceded by the generality landlords with less hesitation than a term 19 or 21 years. I think, whatever the te may be, in the event of the death of the less the lessor should, in addition to his ordin powers of re-entry, for breach of coven have power to determine the tenancy bef the expiration of the term by a two years' noti to quit. This period would afford time opportunity to test the qualifications of party introduced into the tenancy. If his nagement were good, public opinion, if right feeling of an English gentleman wanting in the landlord, would generally secu the tenant against unfair disturbance or mol tation. I think such a power to determ farming leases as the one I have sugge ought to be reserved to lessors, and 1 think it one with which English landlords may be entrusted. At all events, such a reserv tion of power to the landlord might be perfectly unobjectionable, by a stipulation in the event of its being exercised, the ten should be paid for all permanent impro ments made with the acquiescence of the lord or agent, of which he had not had to reap the full benefit."

The above extract embodying almost that can be said upon the subject, (a important one) of the sort of tenant a lord in justice to himself should bears out our previously expressed opini upon the subject. As to the necessity covenants on the part of the tenant dur the greater part of his lease we confess do not see it—if his own interest will dictate to a leasehold tenant the ne for improvement and good and careful management, right sure are we that no covenants which legal ingenuity ever yet framed will compel it. Protect the estate if you please during the later years of the term, and this would be very effectually done by allowing the tenant a remuneration in money, if he leaves his farm at the end of the lease, for the *bona fide* improvements he may have made and left.

ADVANTAGES OF LEASES, &c.

There cannot be two opinions upon the subject, that leases are favourable to the progress of agriculture. A tenant at will, or from year to year, may plough, sow, or reap, but he will, if a prudent man, be very careful in making improvements, inasmuch as there may be reasonable fear of a rise in rent, or notice to quit. The general principle which should regulate the connection between landlord and tenant seems to me to be, that while the occupation ought to be restored to the owner without deterioration at the conclusion of the lease, the tenant should also be encouraged to render it as productive as possible during his possession. In both cases a lease is scarcely less necessary for the landlord than the tenant. Leases, beyond all doubt, granted for a number of years, enhance the value, and secure the property. If the rents of two estates for half a century back are compared, the one occupied by tenants at will, and the other by tenants under long leases, that under the management of tenants at will, will remain nearly stationary, whilst the other will be found to have gradually, yet materially improved; thus yielding for the succeeding term an increased revenue to the proprietor. It cannot surely be necessary to point out to *farmers* the advantages of long leases. *It may be true*, that under the security of the honour of the English nobility and gentlemen, tenants at will have continued in *possession from generation to generation, and acquired wealth*; but there are few individuals, in any rank of life, who continue for any length of time to sacrifice their claims upon the altar of pure generosity. It appears to me, that no prudent man would invest his capital in improving another man's estate, unless from the length of lease he had a reasonable prospect of being amply remunerated; and the servility, which holding at will necessarily exists, is altogether incompatible with any man possessed of capital, a spirit of enterprise, and an enlightened mind.—Any tendency to effect increased production presses upon the public at large; and the English people may justly complain of the want of leases, as one of the principle causes which checks the supply of necessaries in their markets, and renders necessary the introduction of articles of foreign growth. I do not intend to enter into any lengthened argument upon the terms of leases, but to suggest that 15, 18, or 21 years seem to me to be the best length for both parties, as according to soils, situations, and covenants, they will embrace the different periods of time necessary for the fulfilment and expiration of such rotations as may be suitable, so that the proprietor may, at the expiring of these terms, have it in his power to make what alterations may be deemed necessary. Objections of a feudal and aristocratic nature arise upon longer terms;[*] but this truth ought to be borne in mind, that a lease or contract is a mutual obligation, existing between *two* parties. There are probably few parts of the United Kingdom where estates have increased more in value than in the county of Northumberland; in several cases the rentals have trebled; and this, in a great measure, may be attributed to the effect of 21 years' leases, by which means men of capital, ability and industry, were encouraged to make those exertions from which such advantages have resulted, not only to themselves and the proprietors, but to the community at large. The dark and mysterious plan of sealed proposals for farms has long been practised, and seems to be adopted by those agents who cannot, or dare not, trust their own judgment in the valuation of what they have to offer, but this plan frequently defeats the end it is attempted to accomplish; and some of the first-rate farmers have foregone their farms, rather than submit to contend in the dark. It is the opinion of the best agriculturists in Great Britain and France, that the employment of legal men and bankers, as land-stewards and agents, has acted injuriously upon the interests of agriculture throughout Europe. Chateavieux has clearly shewn how this system has operated through France and Italy; and Dr. Henderson, A. Young, Marshall, &c. &c. have deprecated its influence in Britain. The love of precedent which, from habit, these men cannot abandon; the love of litigation to which they—some of them at least—adhere from taste and interest, and their ignorance of both the theory and practice of agriculture, from the nature of their education, are amongst the causes that have counteracted change and amelioration.—*George Davidson, Darlington, Nov.* 18, 1844.

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[*] We feel inclined to place the objection to longer leases than 21 years, to the restrictive control which such leases would impose upon the owners of the soil in their dealings with it; a lease for 21 years is, in eight cases out of every twelve, a lease for life, and for any period beyond that, it is unreasonable men to contract. A lease for 21 years, too, affords time for a tenant, or his representative in case of his death, to recover the outlay he may have made in improvements, which, if of a permanent nature, he could not do in less time.—Ed.

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THE REPEAL OF THE MALT TAX.

We noticed in a late number that an agitation for the repeal of the Malt Tax had commenced, and we ventured to foretell that it would acquire in its progress a propulsive force which would carry every thing before it. The success of the late meeting *at the* Freemasons' Tavern strengthens all our previous convictions, that nothing can impede the onward course of this most important movement. It was well observed by one of the speakers that with an increasing supply of foreign cattle in our markets something must be done to enable the British farmer to meet the competition, and this something appears truly in the form of a repeal of these obnoxious laws. We *must* make barley our principal cattle food if we would render our soils in every way most productive—it is not alone that the comforts of the labouring population and its social and moral welfare is dependant upon the abrogation of this most iniquitous tax—it is not that the hard earnings of the working man shall be preserved to his family, and himself from those haunts of vice and debauchery, the beer-shops, and from impending ruin—the abolition of the malt tax will be conservative of other important interests of the poor. At one of the meetings which have been held upon the subject, it was stated, that one farmer alone is the consumer of 200 tons of oil cake annually, and this no doubt of foreign growth—repeal the malt tax and he is at once the consumer of a given quantity of barley, in the growth and preparation of which, English labour and English capital is alone employed—there is surely produce enough of all kinds for which our climate compels us to be the debtors of foreign states, without creating, as this law does, an artificial want amongst us—we need not foreign oil cake, if our legislators will permit us the use of malt. Let us look for a moment to the extent to which the cultivation of barley will be carried, supposing it can be employed, of which there is really no doubt, instead of cake in the fatting of cattle—one farmer will consume, for this purpose, in lieu of 200 tons of foreign oil cake, 1200 quarters of home grown barley, by what figure then shall we multiply this to prove the consumption, for this purpose alone, of the whole kingdom? The consumption of malt for public brewing and distillation is 8066,886 quarters, is it then too much to say that our increased consumption of Barley for all purposes will exceed the present demand by two-thirds, or in other words, the labour at present employed in raising barley and manufacturing malt will be three times what it now s, and for every pound now paid in wages or these purposes four will then be paid. This consideration, independently of all thers, would surely operate most powerlly with the government? We have an icreasing population steadily and powerlly pressing upon the means of subsisence, and it is no less the duty of the gislature to take care that means of emoyment, and therefore of subsistence, be ovided for the poorer classes of that pulation, than it is to devise measures r the protection of life and property—his bour is emphatically the poor man's prorty, which he has an equal right to have eserved to him with the rich man's thounds.

The minister has, we understand, subeted himself to a pledge to revise in some ay the financial affairs of the country uring the next session of parliament; this be so, now is the very time for the riculturists to bestir themselves to obtain repeal of the malt tax as a set off against e Tariff and the Canada Corn Bill—as an stalment of that ample justice which ey require and must eventually obtain, being permitted to grow without let or ndrance any crop for which their soil d climate may be suitable.—*O.*

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THICK AND THIN SOWING.

s there has been considerable discussion tely on thick and thin sowing, I will nture to give you my experience and inion upon the subject.

I cultivated a farm for nearly thirty years hich lies 300 feet above the level of the a. The soil is various, some sandy, some avelly, stiff clay, loam, and some bog. ere are few fields all of nature throughout; some of the fields contain land of all the above descriptions.

When I began to farm I was quite inclined to thin sowing, because I had seen very good crops from a little seed. But after a number of years' experience and observation, I found that in certain cases, and in certain seasons, very good, or better crops might be got by thin sowing than by thick. But as a general rule, for all seasons and all soils, it is a very dangerous practice. Perhaps in one case out of twenty thin sowing will answer better than thick. If the season has been a good one for preparing the land and sowing the seed, and if it has been sufficiently drained, if wet, and in proper condition as to manure, then a less quantity of seed will often produce a better crop than if thicker sown.

A farmer must use common sense in sowing. If the seed be the produce of a fine season less will be required than if the produce of a bad one. A farmer in sowing must have an eye to his seed, the land, and the season. I found it the height of folly to make a rule as to the quantity of seed in every case. I was generally my own seedsman, and I varied the quantity in the same season, and in the same field, according as the nature of the soil varied in depth and texture. On very light sandy or gravelly soils I should never recommend to be sown thin. If the spring months be dry, there will be sure to be a thin crop. On stiff clays thin sowing is very dangerous. It is only under the most favourable circumstances, both at the seed time and in the season which follows, that thin sowing, on such soils, will answer better than thick. A well prepared summer fallow sown with wheat in September or October will require far less seed than if sown in December or January. Land which is not naturally dry, or made so by draining, will require more seed than if dry, excepting very light sandy or gravelly land as before stated.

Neither thick or thin sowing will ensure a good crop, if the land is out of condition as respects want of manure, short of tillage, or too much water in it, and too many weeds. Then again, if the land be naturally bad—although the farmer may have done every justice to it in his power, and everything which man can do—more seed must be given than when the soil is naturally good. Some men will, perhaps, say all land may be made good. This I do not believe; and if it could, would it pay?

A farmer on good land may safely use less seed than upon bad land, supposing their management equal. A good farmer may safely use less seed than the bad one on the same description of land. Elevation and exposure must be considered in the quantity of seed given. In short, no rule can be given as to quantity of seed sown, which will apply to every case. I have been very often surprised to see farmers using the same quantity of seed when the season is very favourable as when very unfavourable.

Thin sowing will often produce a fine crop as to bulk, both straw and grain; but is very uneven in ripeness, and, of course, the sample of grain is coarse and of little value. When every grain of seed can be put at its proper depth, and at perfect regular distances, in a good clean soil, by dibbling or by a good drill, then a far less quantity of seed will be sufficient than when sown broadcast. But upon the strong soils of Lancashire and Cheshire, there is scarce a season in seven that a drill machine could work to advantage in the autumn months. Our climate is too moist. The strong land farmer in the eastern, midland, and southern counties, know nothing of the difficulties we have to contend with. —*W. Rothwell, Winwick, Dec.* 28, 1844.

TREATMENT OF FARM HORSES AND LIVE STOCK.

I will proceed to detail the feeding of our horses, and the proposed treatment of our cattle and sheep:—They are never turned out, nor do *they receive any* Grass-hay, or Clover-hay—
except a small portion during th
between green-crops and root-crops.
mer they are fed in mangers on W
chaff, cut one-eigth of an inch, and T
cerne, or green Rye, cut also into
same size, adding ground Beans, Oa
with Linseed. In winter, our Carro
and Mangold, will be well wash
through Gardner's Turnip-cutter,
passed through a toothed-cutter m
as to become what I call root-cha
then be mixed with very fine Whea
Oat-straw chaff, and a little grou
Barley, or Oatmeal, soaked Linsee
Potatoes, and a little salt, varying
much as possible to stimulate their
In fact, to sum up, we shall presen
in the form occupying the smalle
compass and requiring the least mas
Every half-hour saved in feeding i
added to their rest—a most importa
ent in fattening. The dry chaff w
laxity and flatulence, producing a
cient and healthy excitation of th
whilst it will afford to the gastric jui
access to every part of the mass of
mixture appears by its various consti
fectly adapted to the formation of bo
fat, and flesh, all which are essentia
velopment of a well-fatted animal

Our horses have a plump musc
vigorous rotundity, proving what I
that their food contains every nec
ment; they thrive wonderfully an
little—they get their breakfast, dinne
per, in perfect quiet. This is better
ing them for a ten-mile walk mornin
ing, thus depriving them of six
their skins are soft and their coa
their general appearance exhibiti
strength, and content. In this all
my farm agree. Were it not for th
bour, I have no doubt they would
sively fat; therefore I am justified i
ing a similar result for my bullocks
The least they plough is one ac
seven inches deep for each pair, a
ally one and a half acre, particul

harvest. One pair also trench or subsoil-plough one and a half acre per day during harvest, which is great work. I cannot now state exactly what number of horses we shall require permanently. I rent 45 acres adjoining my land, so that the total holding is 173 acres; we shall certainly require six at least on our principle of trench ploughing, and not resting the land. At present, owing to the great arrears of cultivation, and the various operations of subsoiling, stone carting, &c., we have an additional four, and sharply they are worked too.

For lean bullocks, the straw chaff and green feed, or root-chaff, will be better than too rich a diet at first. As they freshen we shall give them richer food, and increase its quality by degrees, adding soaked linseed, &c. Our horses and cattle will always have access to rock-salt. I apprehend in bullocks as in horses, a change from very poor to stimulating diet would be hazardous without a previous preparation by physic.

As I said in my former letters, there should be warmth, cleanliness, ventilation, and good grooming; bricked floors set in cement and well drained, appear well adapted for cattle generally. They should occasionally be washed down with sulphuric acid and water, or sprinkled with gypsum. This will convert the offensive ammonia into an efficient manure. All stables and cattle-rooms should have their walls and ceilings lime-washed at least once a year—the mangers well scrubbed. A harness-room in stables is indispensable.

My farm-yard will not look like one, for not much loose straw will be seen—a little straw-chaff may appear here and there, to absorb the moisture and excrement from the cattle; but the soiled part will be removed daily or frequently to the roofed tank, so as to go on the land as rich as possible, fermented, but not washed by rain, or evaporated by sunshine or wind. The rest of my straw, both wheat, bean, and oat, will be converted as chaff into food for my stock, and so go to market in the shape of mutton, beef, or pork—*or be forming bone or sinew for my horses. In conclusion, it will afford me very great pleasure to receive hints* from competent practical men on the subject of this letter.—*I. J. Mechi,* 4, *Leadenhall-street, London, August,* 1844.

TURNIP DRILLING & MANURING.

We extract the following from a paper on Turnip Culture, in the last number of the *Scottish Farmer*:—

The land being now sufficiently pulverised and cleaned, is ready for being drilled. The most convenient distance for the drills is about 27 inches from centre to centre. They should be of sufficient depth to cover in the dung, and to prevent it being again laid bare by the sowing machine. In dry weather and on light soils, or on clay soils not sufficiently pulverised, the setting-up of the drills should not long precede the application of the manure, as the land is apt to become too dry, and unfit for affording sufficient moisture for the vegetation of the seed. When farm-yard manure is to be applied above, it should be in the form of *short muck*, or in other words, it should be well fermented, and at the same time as much of its volatile parts preserved as is possible. In order to effect this desirable object, and to secure the full effect of the urine and dung of the cattle and horses, every dung-court should be provided with a reservoir in such a part of it as to allow the whole *sap*, after (?) it has filtered through the solid mass, to sink into it. From the reservoir the urine should be occasionally pumped and spread over the dung-heap, in order to saturate it as much as possible with the fertilising part of the urine. A covered drain should also be connected with this reservoir, near its surface, to allow the urine to escape when it is full, and not required for spreading over the dung-heap. This drain should terminate in a pit at some convenient place, which should be half-filled with peat-moss or rich vegetable mould. This pit may be emptied occasionally, and the contents used as a top-dressing. In warm weather, a sprinkling of sulphuric acid (oil of vitriol) may be useful to prevent the escape of the ammonia. When a sufficient quantity of dung is collected in the court, it should be covered above and on the sides with peat-moss or earth; or it may be removed to the field, and covered in the same manner. When treated in this way, the dung will be found of much more benefit to the land than when the rain-water is allowed to filter through it, dissolving its most useful constituents, and carrying them off without being again returned, as would be the case where a reservoir and pump are used. The usual quantity of dung applied to a Scotch acre is from 25 to 30 loads, which is not too much to supply nourishment to the different crops during a rotation.—A crop of turnips may be raised with a much smaller quantity; but the land in that case, instead of increasing in fertility, would soon become impoverished.

When the dung is put into the drills it should be broken and parted equally over the whole.—In fact, much depends on the breaking and parting for securing an equal crop. When the dung is not properly divided so as to incorporate with the soil, there is both a deficiency in the crop, and a waste of manure; as a turnip obtaining nourishment from an unbroken lump of dung never obtains that size of bulb which, under other circumstances, it would have done. The dung having been spread, the drills should be closed as soon as possible, and the seed deposited with all convenient speed. A great difference is often observed between the crops on drills sown immediately after the dung has been covered in, and such has have been left without being sown only for one night. As a general rule, the seed should be deposited at the depth of from one and a half to two inches. It has been observed that a more equal braird is secured in this way, and that there is less risk of injury from the fly in dry weather. By depositing the seed at this depth, the braird may be longer in appearing; but, on the other hand, the roots are nearer the manure, and on that account, less likely to suffer from dry weather, or from the ravages of the fly, as the plant is soon able to push up its rough leaf, when it is generally considered safe.

Beside farm-yard manure, many other substances are now used in the raising of tur*nips, and some of* them succeed in doing so in a wonderful degree. It is not, however, advisable to use any extraneous manure to a turnip crop without at the same time applying, at least half the usual quantity of dung. One reason for doing so is, that though an extraneous manure may contain many substances necessary to the growth of the turnip, still, some of the essential inorganic constituents may be wanting, which farm-yard manure would supply. Bone-dust and guano, in particular, may be noticed as very useful, and, i may be added, are now almost indispensab adjuncts to farm-yard manure. When dung is not sufficiently fermented, which must be th case with some portion of it in every season, i is most advisable to use a small quantity bone-dust along with it. When used in th way, six or eight bushels of bone-dust, mix with twice as much wood and peat ashes, alo with from fourteen to eighteen loads of dun will be sufficient for a Scotch acre. The bon dust and ashes should be carefully appli above the dung. From one to two cwt. of guano, mixed with ashes in the same way, woul also form a proper application for the sam purpose. A mixture of bone-dust, ashes, an guano, has long been used with the best effe The quantity of fixed alkali in the ashes is generally so small that it has no injurious effe in setting free the ammonia of the guano. I cases where neither bone-dust nor guano ca be obtained, the droppings found in the pou try-house may be broken down, mixed wi ashes, and used in the same way. The dun of our domestic fowl, though very useful, i not of the same strength as that of carniv rous birds. It may, certainly, contain mo of inorganic substances, but it contains less nitrogen. In using guano, it is necessary to remember, that the seed must not come in contact with it before vegetation has commence Bones prepared with sulphuric acid have bee used in various ways with great success. Turnips are found to contain this acid in their composition; and from this cause, and, probably from the state of minute division in which fo is afforded to the plant, the good effects of th application may be accounted for.

Of the different saline substances which have been tried, many have been of use; but their effects are too transient, and their expense too great, to be used by the practical farmer.

Besides the manures noticed, there are many ther artificial compounds offered for sale; but a general I would caution the farmer against heir use, as likely to lead to disappointment.

After the turnip-seed has been sown, and a hick and equal braird has made its appearance, is still possible, by neglect or mis-management, for the crop to be a failure.

Thinning and Hoeing.—As soon as the plants re of sufficient size, the drills should be pared ith a harrow constructed for the purpose, and inning and hoeing must be commenced. A nvenient distance for leaving the plants apart from eight to nine inches. Two applications the hoe and as many of the harrow are generally sufficient. They should be afterwards set p with a double mould-board plough, and left come to maturity.*

Setting-up.—On dry land they are somenes not set up; but I consider it better to do in all cases, as it admits a freer circulation air among the leaves, and in winter allows melted snow to escape without injuring the lbs.

Turnip cleaning should never go on in wet ather, as the pressure of the hoe closes up pores of the soil and excludes the air, in ich case the plants become sickly, and never ain a healthy maturity.

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AN ENQUIRY INTO THE CONDITION OF
HE ENGLISH PEASANTRY.

By an Ex-Farmer's Son.

is is a time of the year, the severities of ich lead our minds to dwell upon the ndition of our poorer members of society. The farmers are in some districts disarging their men, and have not funds fficient to pay the labourer his small pitnce of nine or ten shillings weekly, and he is thrown upon the parish for support. Sale after sale of agricultural stock and produce, bespeak the wretched condition of the farmer, who is ready to throw up all in despair, owing to the low price of corn, high rents, and the ravages of game in excess; yet, at the same time, he is afraid to complain, for fear of dismissal. The competition for farms is so great, notwithstanding the low state of the profession, that if a farmer is turned out, it is scarcely possible for him to get another farm. As long as they can continue to hold on they do, in the hope that circumstances may improve; but at last are driven to abandon all in despair, after losing the whole substance of their worldly wealth, including both capital and credit.*

This country has long been in repute as a labourer's paradise. Poets have sung of "the short and simple annals of the poor." Peasant life has been painted by them in the most gay and attractive colours. Contrasted by a thousand bright shining pictures against the denizens of the crowded cities and the occupants of the manufacturing workshops. We have been continually reminded of the free fresh air of which he breathed—his lovely cot, surrounded and over-hung with the pleasiug attractions of the woodbine and jasemine—his neat and picturesque garden, filled with the fragrance of the full-blown rose—his lovely and comely wife, dressed in a neat and becoming attire, happy in her own sphere, and cheerful as the lark—his laughing and joyous children, whose fresh rosy cheeks, tinged with an healthful glow, bespeaking in a language more eloquent than tongue or pen can express the happy home of plenty and contentment in which they dwelled—how he arose at early dawn refreshed by healthful repose, pursued his daily toil, cheered along by the music of the feathered songster; borne on the wings of a refreshing breeze, charged with the fragrance of wild flowers and the perfumes of the up-turned clod. How he sat down to his frugal but nutritious repast by his pleasant fireside, surrounded by the pleasing smiles of his happy wife and family—how he spent the summer's twilight or the long winter evenings, and when the day of rest came round in their endearing society, whilst the respectable appearance of himself, wife, and children at church and elsewhere, were the delight of all. These and a thousand other scenes of rural enjoyment and felicity have been pictured to our imagination, on which we would fondly gaze in admiration; leading us to exclaim with the bard of Avon:—

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* This operation is by many highly intelli-nt farmers never performed. They prefer exing the roots completely, by removing all e soil from them *in the operation of the se-nd hoeing, and thus exposing the bulbs to the ion of the atmosphere.*—*Ed. B. C.*

* We cannot believe this to be the general state of the country. Mr. Maughan's statement to the Stewponey Farmers' Club, given in our present number, will account in some degree for the position advanced by our correspondent. If a man takes a farm and has not either capital or skill enough to carry it on, he will find himself in the position above described. That all landlords are mercenery men, or that all agents are ignorant pretenders, we deny—as a rule, the landlords of Britain are an example to the world; though we are constrained to admit that some do exact the full value of their farms according to the old adage;

The true value of a thing
Is just as much as it will bring.

But who is to blame them?—Ed.

> "Oh God, methinks it were a happy life
> To be no better than an homely swain."

But, reader, methinks I hear thee exclaim, "thou art revelling in a land of dreams." Yes! whatever things may have been, where shall we look for them now? Alas! the scene has changed. That lovely cot has become the abode of poverty, misery, and despair—that comely wife tossed on the thorny bed of poverty has shrunk like the blighted rose: her spirit is well nigh broken, and all her habits of cheerfulness and order have forsaken her—despair has seized upon her blighted countenance, wrinkling her brow in the very height and pride of womanhood. Those laughing, rosy cheeked children have changed into a wailing, miserable, half-starved, famished, sallow, lean, squalid crew. He himself, once one of "England's bold peasantry and country's pride," is tossed to and fro like a vessel on the foaming billows of the trackless ocean, without chart or compass; with no beacon or friendly landmark, pointing to some distant haven where may be gained shelter and support. Nothing now remains but the "free fresh air," which is but poor nourishment to an empty stomach—the fragrant perfumes and the music of birds, which is as nothing when not backed by the more substantial fragrance of "roast beef," the clatter of plates and the rattle of knives and forks.

The cry of the agricultural labourer has *hitherto been* unheard. His woes have *been left* untold and his grievances unre*dressed.* The country is at length aroused *from its lethargy.* Revenge has lit up his brow, and shown itself to the world, by the light of the midnight blaze. Society has at length turned the full blaze of its bull's-eye into the shadiest recesses of his privacy. Political economists have calculated his earnings and outgoings, down to fractions of pence and half ounces of tea. In short his concerns are becoming as common as waste land—what he earns and what he spends—what he eats and what he drinks—what he wears and the cost of it from top to toe—where he sleeps and how many of his family lie in a bed. Seven shillings, and sometimes six shillings per week, the year round have been mentioned as the sums from whence a whole family have to derive their subsistence. Fathers with more children than shillings per week—children starving before their parent's eyes with cold and famishing for food. Union work-houses are full, though industrio and willing men struggle to keep clear o of them, when they are only offered fo their week's wages, six, eight, or at mo ten shillings. As yet there is no hope fo the peasant. No living soul appears to car for him, and the curse of his lot is that h is not wanted. The landlord does no want him—the farmer does not want him— the guardians and rate-payers do not wa him. Labour is made an unmarketabl drug—the labourer a cumberer of th ground—work and wages a charity. Whi this continues his wretchedness and degr dation will continue. The labourer is a will be a miserable beggar till society reall wants him; and society never will reall want him, till new fields are opened for th productive employment of capital. The he is from one year's end to the other, wit nothing to enjoy, nothing to hope, a nothing to lose: becoming reckless wi regard to his fate, and revengeful of h wrongs; from thence is lighted the tor of the incendiary.*

The only remedy for the distress of th

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* We do not consider the picture dra by our correspondent, of the condition of th English labourer, as altogether a perfect r semblance: in some districts, it is true, lab during the winter is scarce, and that is a always has been the great evil of agricult employment; for whilst during three-fou of the year the farmer is so busily engaged w his seed time and harvests, (particularly t atter) that he is actually on the look out f labourers, yet during the other quarter he ha not work for half the number of hands he c employ during the former periods.—Ed.

bourer is the improved cultivation
s, causing a greater demand for
ural employment. It is impossible
ver the surface of England, with-
ng that the land is generally not
ivated, nor turned to one-half of
antages which it might be. The
armers generally cannot make im-
nts—they are not in a condition to
they were willing, and they ought
ey were able without an effectual
e. Would the landlords help them?
hey guarantee leases? Would they
e that the crops were not devoured
e? If the landlords would come
and hold out a prospect of *liberal*
l *long leases*, the tenant-farmers, at
se with *capital*, would do very well.
rming can never be the rule with
nants, however much the landlords
towards permanently improving the
. But there must be some secu-
nst the fearful fluctuation in the
farm produce before farmers will
emselves by leases: nothing but
ses as men of capital can depend
ever induce them to enter into any
s whatever; and *corn-rents* are in-
ble, to guard the tenant farmers
ir labourers from the disastrous
of fluctuating prices and falling
. With corn rents landowners will
immediate effects of low prices as
tenants, and a perfect community
st will be thus established between
Suppose a landlord to have an
orth (with wheat at 8s. per bushel)
usand pounds per annum: out of
will most likely have to pay for
upon mortgages and charges cre-
marriage settlements, one half, or
er annum. Well, suppose wheat
to fall to 6s. per bushel, he has the
ount of interest to pay, yet with only
urths of the means; consequently
r income will be reduced one-half.
re stubborn facts, which will, I
reatly counteract the adoption of
nts. Game in excess is a main
to productive farming. We want
mployment for labourers and re-
r industry. There is a great and
ng population whose wants must be
l; and instead of that population
burden upon the land, the land
rly cultivated, would be capable of
ng a fourfold increase.

nthropists, or would be philanthro-
e in the field, establishing new and
chemes for bettering the condition of the labouring poor, but what are they? A variety of random desultory suggestions—some of them ridiculous absurdities. All sorts of crotchetty and fantastical experiments are pompously recommended, complacently discussed and half decided on as grand healing measures. Some are substantial and are eagerly grappled at by a starving population. One suggests cottage allotments of land, which is now becoming quite the rage, being backed by the eloquent glowing speeches of "Young England;" and is we may say the most fashionable of all suggestions. By its enchantments and virtues the whole country is to be transformed into another paradise. The goddess of contentment is to again mount the throne from which she has so long been banished. But alas! I am afraid it will prove all moonshine. I shall again however return to this topic in another place, where I shall place it under more substantial proofs of facts and figures. Another is for carrying the allotment system to a greater extent—making the labourers in fact into small farmers; as if the farmers themselves were in some very envious position, which God knows is little better than that of the labourer. This however shall be treated the same as the foregoing suggestion. Coal and blanket societies are recommended and established without number. Soup kitchens, distribution of two-penny loaves, penny tracts promulgating the doctrines of contentment in poverty, deference to superiors, and showing at what sums a poor family may live or rather starve upon, the authors not distinctly stating whether they write from practice or theory, but I am inclined to think from the latter—are put forth as panaceas for all our social evils. One sagely recommends that gentlemen should "look after the poor properly, and see that their tenants properly employed the poor." If labour can be employed profitably, of course it will be employed, and nothing need be said about duty or compulsion. Others appearing to put no faith in any of these healing salves appear to think there is no alternative but banishment, by emigrating to some of the colonies, or the back settlements of the United States. In fact anything and everything is devised for the improvement of the condition of the labourer, except that of opening proper channels for the employment of his industry—breaking loose the bonds by which he is bound to the earth in pauperism and slavery—creating within

him a feeling of personal and self-respect, and a desire for advancement and social independence. They ask not for charity but for justice, in the shape of profitable and independent labour. Charity will only leave wrongs unredressed and the causes of wretchedness untouched; whilst the labourers themselves will only be kept in slavery and beggary. Independence means " not under the controul of a single person, or single class of persons." Hence aids are rather given in charity, than in promoting means of solidly bettering the condition of the poor. Anything contributing towards their moral welfare and independence, would be a service beyond all donations—worth more than lakes of soup and mountains of blankets.—*E. R. near Wigan.—(To be continued.)*

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HIGHLAND AND AGRICULTURAL SOCIETY.

The first monthly meeting of this Society for the session was held in their Museum, at George IV. Bridge, on Wednesday, the 4th ult., at three o'clock in the afternoon, under the presidency of Mr. Graham of Balgowan.

Mr. **Borthwick** of Crookston commenced the business of the meeting by reading a report on the plantation made by the Duke of Richmond on his estates in Aberdeenshire during the last five years. The ground planted comprises the Binhill and adjoining moors situated in the parishes of Cairnie and Huntly.

The land was surveyed, and a plan made in 1838 by Messrs. Beattie and Walker, landsurveyors in Aberdeen, and they also made out the specifications of the contracts for fencing the grounds and planting them. The fence consists of a Galloway dyke of angular stones, built 3½ feet in height, at 6d. per yard, carriage included, at a cost of £464 4s. 3d. A number of open drains were made through the wettest parts of the gound from 1 to 2 ft. in depth, 12in. wide at the bottom, and from 1½ to 3 feet wide at top, at a cost in all of £225 15s. 7d. A road of 15 feet in width was made for the purpose of giving access to a moss from
which the servants were in the h
supplying themselves with peat fue
which cost £180. The grubbing o
and other plants cost £54 0s. 9d.

Mr **Stephens** shortly described th
or Stubble turnip, and exhibited so
cimens sent to the Museum by Mr
Makins, Shellacres, near Cornhill, i
thumberland. This turnip posses
the characters of the garden stone
and may have acquired its larger si
having been cultivated in the fields.
crop of winter turnips, they are of les
than the kinds usually cultivated f
purpose, but as a turnip coming e
maturity, even though sown late
season, they become valuable to the
by affording him the means of main
the condition of his stock from the
at which the pasture commonly fails,
beginning of September, to the ear
of October, when the ordinary
begin to be consumed in the st
This turnip may be raised with bo
or guano, like any other kind, and
be sown as late as the 11th July, a
afford a good-sized firm bulb by the
ning of the ensuing September, whe
may be laid down on the stubble or
the use of the cattle or sheep.

Mr. Stephens prefaced the descrip
the Stubble turnip, with a few rema
the utility of Rape for sheep early
tumn. It is raised like turnips, a
order to avoid the inconvenience of pl
ing in its strong stems when the con
tion of rape is delayed till late in the a
he recommended portions of it to be
at different times, so that each portio
always be in a young growing state,
slender stems, when the stock arri
consume it. With the possession of
for sheep, and of stubble-turnips for
Mr. Stephens, in conclusion, remarke
farmers themselves would be to b
should their stock want sufficient food
in autumn from the failure of the gras

ter turnips are led into the straw-

of time prevented the reading of
paper on saw-dust as a manure, by
iop, land-steward, Methven Castle.
ARLES GORDON, the Secretary in-
that he had received notice of the
oly death of the celebrated M.
rg, of Hofwyl, in Switzerland.

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s.—The Waltham Abbey Seedling
d kitchen Apple, requiring very
ar.

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[CULTURAL CHEMISTRY.

nual lectures of the Royal Agri-
Society was delivered in the Thea-
› Royal Institution, on the 11th
ult. by Dr. Playfair :—

.e last Lecture, the importance of
and draining had been insisted on;
nvolved the explanation of fallow—
ire of the constituents of the soil to
phere. But although a soil is ex
or instance, of silicate of potash, so
would not grow, it did not follow
that no other crop would grow, as
t still be plants that would grow with
ing constituents of the soil. This
one of importance, as, if there were
it would obviously present the ne-
a naked fallow. Professor Low, in
.ture, had recommended that soils be
ix or eight times; and this was a
of time and money, if nothing else
own in the interim. But in Scot-
iny parts of England, and in Jersey,
em was entirely dispensed with, and
of such a practice is easily under-
eferring to what has recently been
with respect to the composition of
ingredients of plants. In the last
able was exhibited showing the prin-
al ingredients of plants, and although
ontained these, they existed in very
portions, as the following table would
Liebig had even divided plants into classes, according to their mineral constituents :—

—	Salts of Potash and Soda.	Salts of Lime and Magnesia.	Silica.
SILICA PLANTS.			
Oat-straw, with seeds	34.00	4.00	62.00
Wheat-straw	22.00	7.20	61.05
Barley-straw with seeds	19.00	25 70	55.03
Rye-straw............	18.65	16.52	63.89
LIME PLANTS.			
Tobacco	24.34	67.44	8.30
Pea straw........ ...	27.88	63.74	7.81
Potato-herb	4.20	59.40	36.40
Meadow Clover	39.20	56.00	4.90
POTASH PLANTS.			
Maize-straw.........	71.00	6.50	18.00
Turnips..............	81.60	18.40	—
Beet-root	88.00	12.00	—
Potatoes [tubers]	85.81	14.19	—
Helianthus tuberosus	84.30	15.70	—

" This Table is only an approximation to the truth, and its classification inadmissible, as it was opposed to a beautiful law, pointed out by Liebig himself, and confirmed by the experiments of Will and Fresenius, which was that certain bases may replace each other, according to the law of equivalents. Thus, soda may be substituted for potash, and *vice versâ;* lime for magnesia, and so on; but it did not appear that an alkali could be substituted for an earth; still the table was practically useful. The *rotation* of crops must depend on the character of the soil, and this would be seen by observing what kind of plants grew on the rocks mentioned in the last lecture. On the granite rocks, the soil of which contained abundance of silicate of potash, the farmer grew mostly the silica plants, as wheat, barley, and oats, after taking care to manure well with lime or sea-shells, to supply the absent calcareous matter and phosphates. It is seldom that such soils are devoted to pasture, or in other words, to the growth of lime plants. Clay, slate, and grauwacke are degraded granite, but deficient in lime and phosphates; for animals had not yet been formed, and their great characteristic was the possession of potash; and two potash plants, oats, and turnips, were most frequently cultivated on these soils, both of them requiring little of the phosphates and little of lime; on the sandstones, which were much richer in lime and phosphates, but still possessing potash, so that potash plants, and in addition, wheat, barley, and clover, are grown on these soils. Above the sand-stones we come to rocks abounding with animal and vegetable remains, and containing little potash; these rocks are not adapted for wheat, barley, oats, or turnips, and the lime-plants forming pastures are mostly grown. On the coal measures vegetation is poor, arising from the enormous exhaustion of the soil, produced by the plants forming the coal-beds; the clays, however, contained silicates and iron, and with care were cultivated so as to produce various crops. On the magnesian lime-stone plants were grown which required magnesia, and potatoes, wheat, and barley flourished on these soils. After this we come to the new red sandstone, a soil composed of the detritus of former rocks, and capable of supporting potash, soda, and silica plants. The calcareous soils of the lias, the oolite, and the chalk yield lime-plants, beans, peas, clover, and barley. In examining the various kinds of rotations, it would be found that they were precisely such as were adapted to the soils in which they took place. Thus the Norfolk course begins with Turnips well manured, succeeded by a corn crop, followed by artificial grasses, and concluded by another crop of corn; and this took place on most of the inferior clays of England. The manure yielded phosphates, but neither these nor the silica were taken up by the turnips, and the soil thus became prepared for the growth of the corn, as the only thing of importance removed from the soil by the turnips was the potash; and, what was important, potash uncombined with silica. If sheep upon the turnips, they return to the soil the potash contained in the turnips, and also of phosphates. After the second or corn crop has exhausted the soluble silicates and phosphates, a green crop is then grown, and this takes up the lime. By the time the lime is taken up by this crop, the action of the air upon the soil has liberated a further quantity of phosphates and silicates sufficient to grow for a fourth crop of corn, which is often barley, where lime is present, or oats, or wheat where it is deficient. Where there is magnesia present as on the magnesian limestone, potatoes may *be substituted with* advantage for the green crop, especially as their stems return to the silicates. The curious rotation of th lias, consisting of wheat, beans, fallow, o potatoes, would in the same way be adapted to the particular composition a racters of the soil on which it was p Enough had probably been said to s farmer that rotation was not a means of ing the soil. The soil remained in t state, as far as the plant was concerned, great advantage of it consisted in the one crop could be grown whilst the preparing for another. The theory Candolie, with regard to plants thro excrementitious matter injurious to th and beneficial to other plants, was now g exploded, and many facts were entirely to it. Thus, in Hungary, there was poisonous effect produced on the whe although in some districts wheat had bee in succession for centuries. A like that of rotation is produced by many ot cesses on farms; take, for instance, and paring. By this process injurious matter is consumed. Plastic clays changed in their character, not only b all their constituents brought into con the oxygen of the atmosphere, and thus change, but the clay itself acquires character, it becomes absorbent, and from the atmosphere ammonia, carbo and watery vapour, as well as afford mo access to the nutritious substances wh be dissolved in water. But in this, nothing is destroyed, and the inorganic e of the soil are only brought more fully i tact with the absorbing organs of the Another process of the farm was what w liming. When the chemist, in his lab wished to dissolve up potash and silica f soil he was examining, he used lime; this means he rendered soluble that wh insoluble before. Just what the chemi his laboratory by the use of lime, the did in his fields; and this was the use that it rendered certain important ingre the soil more soluble than they were by In this way, lime became a key by w ingredients in the soil were unlocked; it did not in itself become an important ingredient in the soil. It may, however, happen that where we add lime, we may not only be using a means for unlocking the ingredients of the soil, but we may also be adding an important constituent of the soil. This was what made lime an important ingredient as a top-dressing where clover and grasses were to be grown. It would be seen, then, that lime was not used principally as a *manure;* it was seldom required as a manure, for a manure added to the composition of the soil; its principal use was as a solvent of other materials. Common salt was sometimes used as a manure, and Liebig supposed that it acted beneficially by combining with sulphate of lime, and a sulphate of soda was produced. If this was the case, it should act most beneficially on the cereals, and on the leguminous plants, because they are the great generators of the constituents of blood, gluten, albumen, and casein, and these are the parts of plants for which sulphur is absolutely necessary. He was not aware that this was the case. In connection with chloride of sodium he might say, that in a former part of the lecture he had alluded to the fact, that soda might be substituted for potash in plants, and *vice versâ*, but this was no proof that potash could be substituted for soda in the system of the animal. Now it was found that soda was essential to the formation of healthy bile, and when animals were fed on potash plants in the centre of this island, or far away from the sea in continents, they sought with avidity soda in the form of common salt, for the purpose of adding this essential constituent to the elements out of which their secretions were formed. Another process which did not act in the way of direct manures was *irrigation*—the application of water to the soil. When fresh water was applied to the soil it was beneficial, but it was necessary in order to insure its success that the soil should be drained, as it was only fresh water was beneficial. Liebig accounted for this fact by the oxygen contained in the water; when the oxygen came in contact with the soil it united with its constituents, and thus assisted in the process of disintegration. Another valuable property of the oxygen was that it united with the blue or protoxide of iron, and converted it into the peroxide; in the soils where this was contained, he had pointed out in the first lecture the importance of this action. Again, other waters contained carbonic acid, and where this was the case in limestone districts, the water also held in solution carbonate of lime. Now the carbonic acid acted also on the constituents of the soil, and produced disintegration; and whilst this process went on, the carbonate of lime also, which it held in solution, was deposited on the soil as a manure. Stagnant waters, unless they contained uninjurious organic matters, were not beneficial to the soil, and when they became so they acted as true manures. He now came to the *true manures.* These matters supplied some substance that was destitute in the soil. The food animals got from plants consisted first of those secretions, containing large quantities of carbon, as sugar, starch, gum, &c., and those secretions which contained nitrogen. Now, although these secretions contained principally carbon, hydrogen, oxygen, and nitrogen, yet they required for their development inorganic matters. Thus Liebig had proved, that the carbonaceous secretions could not be developed in plants without the presence of small quantities of potash, phosphate of lime, &c. It was the same with the nitrogenised secretions. The forms of protein, albumen, fibrin, &c., required for their development phosphorus and sulphur, and these were obtained from the inorganic constituents of the soil. An important fact connected with the action of inorganic manures was, that none of these substances were destroyed in the system of adult animals—they were not destroyed as the carbonaceous and nitrogenous secretions, but were always again restored to the soil, in the form of excrementitious matter. It was thus that all animals, in their fæces and urine, returned to the soil those inorganic ingredients which they had taken up from the soil in their food.

The Lecturer here went into a series of calculations, showing the necessity of using human excrement as manure. Where man ate Wheat, he threw off from his system those inorganic ingredients which were necessary to the growth of Wheat; where he ate Potatoes he furnished material for the growth of Potatoes. He proved these positions by reference to many well-conducted experiments on the composition of human excretions, from which it was found that they alone were capable, when properly preserved, of supplying all the exhaustion of the soil produced by the growth of food for man. These excretions varied in their composition, but it would be found they only varied according to the food which had been used. He urged upon all present the necessity of every means being used to make available this precious storehouse of inorganic matters for manuring, which not only existed in the right quantity as a food for plants, but also existed in the best form for the nutrition of the plants most needed by man. The value of the waste of these materials that was constantly going on was quite prodigious, and could only be estimated by those who looked upon the subject with a scientific eye. As some questions had been put to him since he had been in London, he would refer, before concluding his Lecture, to some remarks and experiments which had been made by M. Boussingault, the most distinguished agricultural chemist in France. This learned chemist had lately referred to some experiments of his own, with regard to feeding cattle. The French chemists had all along maintained that the fat of animals was only obtained from the fatty matter which they already took in with their food. On the other hand, the German chemists and himself maintained that the fat of animals arose from an imperfectly consumed form of the carbonaceous secretions, such as starch, sugar, and gum. A familiar instance of such a change took place in the burning of coal; when this substance was burned in the open air the whole of the carbon of the coal was consumed and carbonic acid was formed, but when coal was burned in closed vessels without access of oxygen, then a tarry matter was formed from the imperfect combustion. What took place *in the coal took* place in the starch, sugar, &c. Now, when animals have small lungs, substances cannot be fully consumed b want of oxygen, and an imperfect met phosis takes place—they are converte oily matter, which is deposited in the of fat. Dr. Lankester had pointed o fact, in connection with a series of tables, up by Mr. Hutchinson, of measuremen weights of human beings, in which found that in proportion to the circum of the chest was the weight of the dual. He had, in previous Lectures this Society, pointed out the fact t broadest-chested animals had the s lungs, and there could be little doubt t smallness of the lungs taking up less in the human being accounted for the in weight observed by Dr. Lankester. regard to the experiment which M. singault had criticised, and which he h racterised as having been performed "*a telle activite*," he could only say that stated at the time they were performe were to be taken only for what they wer from the short time in which they w formed, and as indications of exper with the same object in view. M. B gault had performed experiments to pr he had been wrong in his conclusions, would allude to these experiments wi respect which was due to so distingu chemist. M. Boussingault, in order t that the fat of animals was not derive the starch, sugar, &c., weighed anim fore and after feeding with Mangold and Potatoes (substances which conta little fatty matter), and found that, ins increasing in weight they diminished; only did they not diminish in weight portion to the less quantity of fatty they had been supposed to consume, b dimininished 100lbs. in addition. N Boussingault had not considered the c this extra diminution of weight—a din so much greater than his theory requi what were the real causes? Why, the been fed on food which was unnatur formerly it had been fed on hay, an materials, which required the powers of its four stomachs to digest, but now it was given a food which it could not digest without bulk to assist the peristaltic action of its stomachs, and the consequence was, as every farmer knows, the animal was purged. Now, it was this purging that must have reduced its bulk, and not any want of the conversion of sugar and starch into fatty matter. These experiments of M. Boussingault did not prove that he was right, and they did not prove that he (Dr. P.) was wrong; at the best the experiments remained where he had placed his own at first, as among subjects that required further examination.

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PLEURO-PNEUMONIA.

The following remarks upon the subject of this terror to the stock farmer are attributed to C. Vis, Middelburg, President of the Board of Agriculture, Province of Zealand, Holland :—

"Allow me the liberty of addressing to you few lines on a subject which, it is to be feared, will become of the greatest moment to the agricultural interests of your country. I have observed in your journal that the alarming distemper which partially exists among cattle in England, seems, from description, to have the same symptoms as those which have been observed for many years in some parts of this country, in the distemper called lung-sickness, which has ruined many farmers, and has occasioned, and still continues to occasion, a loss of several millions in the national agricultural capital. This distemper is of such fatal influence in the disorganization of the lungs, that no cure for it is to be found, and we consider every recommended specific as useless and without effect. I have the pleasure of sending you a treatise on this distemper, written by one of our cleverest veterinary surgeons; it gives a full description of this disease, and proposes the only possible method for stopping the immense losses which it occasions. This treatise has been already forwarded to your Government by the English Consulate; but, being written in Dutch, is probably neither understood nor translated. If its translation could be ordered by your National Agricultural Society, it would give a more general knowledge of the character of this disease, and would open a dreadful prospect of its consequences, were it once to gain a seat in the blood of your *immense and* valuable stocks of cattle. There is no doubt, if no effectual measures are taken by your Government, your cattle markets will soon bring this distress all over the country. The only way of preservation against this infection is, not only to kill every head of cattle attacked by this disease, but likewise every other, though apparently in a healthy state, which has grazed, or been in the same stall with an infected animal. In this, our province of Zealand, this method has been adopted; and I have witnessed eighteen instances of this distemper, against which, in the full conviction that no other remedy could have a chance of success, I proposed to Government, in my quality as President of the Provincial Board of Agriculture, to kill at once all the cattle existing on any farm where this disease had broken out—the value of the said cattle to be reimbursed by Government to the owner, after valuations ordered beforehand. This having been granted, I have had the satisfaction, by the execution of this very severe measure, of preserving till this day this part of the country from those immense losses which have been experienced in other provinces. It has been very remarkable that, in every instance, the origin of the distemper lay in infection by other cattle brought over from Holland; by which it has been fully proved that the cause must not be attributed to any atmospheric or other influence at home, but wholly to infection. The few instances of recovery are always partial; the virus of the infection is never extinguished, for the power of its influence on other cattle continues, though the animal itself should become fit for the butcher. When we consider this distemper in its various periods, together with the results of *post mortem* examinations, the conviction is inevitable that the lungs, which are grown to an immense fleshy volume, can never be brought back again to their former natural state, and consequently that no cure is possible. I hope you will consider this communication as having no other aim than to make you acquainted with the dreadful consequences which must take place when a proper line of conduct is not prescribed; for, if owners of cattle should rely on the promises of veterinary surgeons, who should give hope of a cure, they will be in a false position, the contagion will gain ground every day, and when it shall become more general, it will be beyond human ability to put a stop to it."

Any information upon the subject of this most distressing malady will be read with interest, although many in this country will feel well inclined to doubt the fact of its transmission by infection.

With the truth of this, however, we have little to do, for where "doctors differ," farmers may be surely permitted to be in some degree a disjointed body. That we have the disease, and that its ravages are fearful, are facts enough to induce us to give attention to every plausibility we can pick up, tending to show us how it may be avoided altogether or successfully treated where it occurs. We are happy to hear less of it latterly in this kingdom, either because it is really less prevalent or that farmers are now taking advantage of the very excellent principle of mutual assurance against loss from it.

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Australian Vegetation.—Mr. Ind, the market gardener, having found some of his cauliflowers (of this season) too large for many of his customers, has resorted to the novel expedient of retailing them in halves and quarters. —*Adelaide Observer.*

Rise in the Price of Timber.—We are informed that the advance in the price of American timber, within the last twelve months, has been nearly 50 per cent. This extraordinary ise is attributed to the steady demand and the riminished stocks, caused by the great amount of shipping employed in the guano trade. The timber-carrying trade has not, for many years, been a profitable one, and though a great amount of tonnage will, no doubt, be employed next year, and tend to check the rise, still, as freights will necessarily be high, timber will, no doubt, for some time to come, command first-rate prices to the importers.—*Glasgow Courier.*

Potato-feeding.—A correspondent in a late number of the *Gardeners' Chronicle*, under signature of "Hatfield," asks if he may give potatoes to his cows in a raw state; and if so, in what quantity. Another correspondent in the same paper replies, "if he has no means of cooking them I would recommend him to sell them, and expend the proceeds in some other kind of food. I have had considerable experience in feeding with raw potatoes, but always with unfavourable results. If the potatoes are given in sufficient quantity to produce any effect, they will (notwithstanding as much hay be given with them as the cattle will eat) relax the bowels to such an extent that the effluvia of the cattle-house will be *almost insupportable*, and neither bedding *in abundance*, nor every attention to cleanliness, will keep the stock comfortably dry. I do not think it would be possible to get sweet milk from cows fed upon raw potatoes, whatever attention might be paid to washing the udder previously to milking. On the other hand, if "Hatfield" can contrive to steam his potatoes, I think he will not repent it. I have not tried cooked potatoes for cattle, but have given them for many years to horses in work of the severest description, mixed with their chaff and bruised corn, and have every reason to be satisfied with the result.—[We can add our testimony in favour of steamed potatoes as food for horses; but we think Swedish turnips are equally good and much cheaper for that purpose. Raw potatoes may be given in moderate quantities to milking cows, but they should, at the same time, have a small quantity of crushed oats with hay and straw. We strongly advocate the cooking of food for domestic animals, not that in every case the food is rendered by the process better for them, but that a smaller quantity of it (particularly of corn or roots) will suffice.]—Ed. B. C.

Sulphuric Acid and Bones.—As the result of an experiment in farming is worth noticing, I may mention that I have tried the sulphuric acid and bones together, and have found that Swedes grown with sulphuric acid and bones, 8 bushels of the latter and 4 stones of acid to the acre, have equalled those grown with 6 loads of manure and 2½ cwt. of guano, and those grown with 12 loads of manure. The crop in neither case has become more than a moderate one, from the unfavourable season at the time of sowing, but it proves to me the great value of the sulphate in the growth of Swedes, to which I was led to attend by the analyses of Sprengel.—*A Subscriber—Gard. Ch.*

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LARGE EDGES AND SMALL ENCLOSURES.

At the last monthly meeting of Exminster Farmers' Club, the subjects for discussion were—first, "On the best kind of wheat for seed suitable to different soils, and the best time and method for sowing," on which an animated discussion took place. The next subject considered was, that of the "large hedges and small enclosures of the county of Devon," on which much discussion took place, the result of which led to the following resolutions being moved and adopted unanimously by the meeting: —First, that in the opinion of this meeting, the present state of the large hedges and small inclosures in this county are highly prejudicial to the tenant farmer, and also to the community at large, and that Mr. Grant is deserving of great credit for having so ably brought the subject before the public, in the pamphlet which he has published. Second, that in the opinion of this meeting the sizes of inclosures on farms of the following measure, say 100 acres, 200, 300 and upwards, for the county of Devon, should be as follows:—A farm of 100 acres, with a fair proportion of arable, pasture, nd orchard, should be divided thus; arable elds, from 6 to 8 acres each; pasture and eadow, 4 to 6 acres; and the orchards in ch sizes as may be found convenient to it situations. A farm of 200 acres, as ove, arable fields, 8 to 10 acres; pasture d meadow, 6 to 8 acres each; and the hard as above, to suit situation. A farm 300 acres and upwards, as above, arable lds, 12 to 15 acres each; pasture and adow, 8 to 10 acres each; and the orard to suit situation.

New Implements.

EWBERRY'S DIBBLING MACHINE.

s many agriculturists, who have not tried is implement, may be desirous of learng something about it, I think it my duty state what I know of its operation on y own farm, without favour or prejudice. he quality and quantity of crops grown om it I cannot yet give any opinion about om my own experience, but that is not ecessary, because the report published in e Royal Agricultural Society's Journal March, 1844) is quite conclusive of their periority over the drilled crops. My achine has five rows of dibbles, cost me 60, besides carriage, and expenses of a an to instruct us in its use. I have dibled with it one acre in several fields mongst the drilled corn, *one-half of the* acre having five to six kernels in a nole—the inventor's quantity; the other half two to three kernels in a hole: this is my quantity. The former takes about 5¼ pecks per acre, the latter about 2¼ pecks. This will enable me next year to compare the result fairly, with a view to the most advantageous quantity of seed. I have also hand-dibbled one land in each field—one foot from row to row, and one foot from dibble to dibble—two kernels in each hole, as a still further comparison of the best distance and quantity of seed. Newberry's machine dibbles eight inches from row to row, and six inches from hole to hole. I received the machine too late for October sowing; however, in spite of the prejudice of my folks against it, I resolved on trying it, with a view to reporting progress next year. The quantity of wheat already dibbled is about 12 acres, and if the weather permits I shall have done a further quantity. So far as I have tried it, I come to the following conclusions:—

1st. That on sandy, light, or mellow soils, it is, in its present state, an indispensable and most valuable implement, only requiring to take a greater breadth.

2d. That on heavy land, in a DRY state, it is also perfectly available, with some modifications and improvements hereafter suggested.

3d. That on dense soil in a wet or pasty state it cannot be advantageously used, the dibbles bringing up stones with the bird-lime—like clay. These stones choke the machine and interrupt its action, obliging one frequently to stop the horses to remove them. Being a very heavy implement it solidifies such land too much if in a wet state. Independent of the lateness of the season at which we received it, we had many difficulties to overcome which caused delay. I had several improvements to make, which I consider absolutely essential, where it is intended for *heavy* land, and which the inventor should attend to. These are—

1st. The scrapers being of *cast* iron, broke off piece by piece, where the stones I spoke of came in contact with them. I have substituted *wrought* iron scrapers.

2d. In its present form, the horses have all to walk in a line on the land before the machine. This is very objectionable on heavy land, even in a slightly moist state. I have arranged mine differently, so that two horses walk in each furrow, or where only three strong horses are used, two in one furrow one in the other. Even so, it requires judgment in the driver, because the weight being greater on one side than the other, a sudden start would cause the machine to deviate from the straight line, which does not look well.

3d. The machine in its present state covers about 3 feet 6 inches, one wheel on the land the other in the furrow. I would strongly recommend (even at the increased expense) its being made to cover a whole land, so that one wheel might go in each furrow, same as a drill; six horses would draw it well, and it would economise time when it is too precious to be wasted, and where a day lost is six to eight acres unseeded.

As to the quantity of work the machine will perform in its present state, I should say, on light land, four acres per day; on heavy land, in a *dry* state, not above three acres per day, much depending on the men and horses being perfectly used to it. Three strong horses, or four middling ones, are required. Of course it is well understood that the machine drops the seed as well as dibbling it. I consider it perfectly available for oats, barley, peas, or beans, (except the large beans,) using suitable rollers. For the information of those who may not have seen the machine, I will endeavour to describe its action.

The hoppers contain the seed—the feed rollers are solid wooden wheels; in their circumference or rim are small cupped openings, made to contain one or more kernels, as may be desired. These rollers revolve under the hoppers against a brush, which sweeps off all the seed except what is in the cupped rim of the rollers. As soon as the cup passes the brush, the seed or seeds fall out of it into the hollow dibbles. The dibbles are of cast-iron, about the diameter of an egg, hollow within, and slit into two parts—one attached to the rim of a wheel, and the other moveable. After dibbling the hole, one-half of the dibble rises out of the hole before the other, and of course the seed slips out from the tarry*ing* half. The operation is simple and *certain.* The dibbles in passing round are met by revolving scrapers, which
the adhesive clay in heavy soils.
dry soils they are scarcely required

There are many advantages in
being deposited so deep as two
inches on a firm bed or basis: the l
soil falls lightly on it; it is below t
of birds, and difficult of access tc
which cannot follow the line of s
a drill. The plant is longer appea
having a deep root and firm su
earth on every side, it is less liab
thrown out by frost or laid by wi
greatest advantage of all is, perh
ample room between each plant
and frequent hoeing. The solid b
the machine on the soil renders
available immediately after the
without intermediate harrowing o
provided it is clean. There ca
question as to this machine pa
ample interest beyond its wear an
the diminution of seed and increas
duce, even on a farm of 100 acre
Mechi, 4, *Leadenhall-street.*

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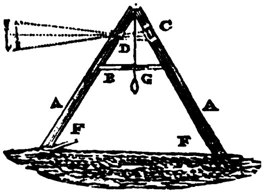


THE A LEVEL, FOR THE U
WORKMEN

In preserving an uniform fall or i
in works requiring such regular

To Agriculturists, Engineers, S
Builders, and others.—The woodc
shows the instrument—its figure wil
the reason of its being called the "A
while the observer will compreh
glance its portability and the faci
which it may be used either on the
or in the trench. The bar B turni
a hinge and falling into groves c
legs A, these legs may be closed, as
compasses fold; and the whole may

as a rod for measurement. The legs A are sufficiently narrow to stand in the narrowest trench; while the false feet F afford the means of stationing the instrument on the surface.

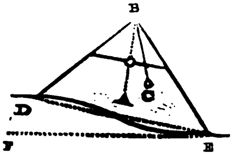
The object of the instrument is to assist foremen and workmen in testing and preserving an uniform fall in all works requiring such regularity. A spirit-level, if understood by workmen,, is a thing easily put out of order, and is at all times liable to be broken; its use, therefore, is dreaded by workmen, as a process involving too much time, care, and precision, for their fingers to perform

In draining and sewering, if the first object of the operator is to direct his drains according to the best fall of the ground; the next point of importance is that the floor of the trench, and the course of the tiles, piles, or bricks, should be even and regular from the top to the bottom of the drain. Any hollow in the drain intercepts the sedimentary matter which the flow of the rain-water would otherwise carry out with ; the sectional area of the water-way is hereby lessened, and the sediment, graduly accumulating, after a time causes a oppage, the drain bursts, and the work as to be re-done.

The Level placed in the trench, as it is ing preparatory to laying in the tiles, indicates by the plumb-line any irregularity bad orkmanship may occasion. Such use of e instrument is merely analogous to the mode by which the carpenter applies his quare and plummet. It is my wish to rove that the extended principle upon hich the A Level is based is so sound, hat if accurately constructed the instrument cannot work otherwise than with perfect efficiency, *in determining the average* ll *of surface between any two spots within ight of each other.*

It should be observed, that the legs of he instrument being equal in length, form, ith the base upon which they are placed, a isosceles triangle, and that, *when that* base is perfectly level the plumb-bob pendent from the apex must necessarily divide the triangle directly in half. This admitted it is equally clear that by means of a bar connecting the two legs at any given distance, and exhibiting on its face the centre or half of the angle at the apex, any person is competent, guided by the plumb-line, to raise or depress one leg until it stands on a level with the other; the plumb-line will will then hit the centre.

Now, as the plummet will always hang vertically, by reason of its weight, any rise or depression of either leg is immediately indicated on the connecting bar by the equivalent deviation of the plumb-line from the centre.

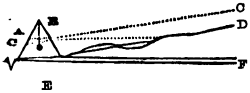


The angle A B C is equal to the angle D E F, *i. e.*, the angle made by the hypothenuse or surface with the horizontal line is equal to the angle of the line dividing the triangle in half, with the vertical line.

Thus, the difference of height between D and E may be calculated by multiplying the natural sine of the angle D E F (read off on the bar as A B C, *if the index represents degrees,)* by the length of the ground spanned between E and D. In the A Level this is already done; and instead of degrees and minutes, inches and quarters are divided on the bar, so that the operator may at once read from it the difference of height between the two spots upon which the instrument stands, and *vice versâ.* If it is required to sink one leg an inch below the other, the ground is lowered until the plumb-line strikes the 1-inch division of the index on the bar.

It will be seen, that at a certain distance from the apex, on each leg, a line of sight is shown. On the one leg there is a sliding sight-hole answering to a fixed index, agreeing with that on the bar B; on the other leg, there are cross hairs fixed, the centre of which are exactly the same distance from the apex as the nonius of the index on the opposite leg. The line of sight, therefore, from these two points is ever parallel with the base of the instrument

To arrive at the average fall of surface from the top to the bottom of a field, the instrument must be placed on a level by means of the plumb-line. The operator must then send forward his assistant-workman to the spot D, at which he intends to end his drain, with a stick marked by a paper fixed in it at a height C above the ground, agreeing with the height of the cross hairs B, above the base of the instrument. He then slides up or down the sight-hole until he fixes the cross hairs upon the paper in the stick.



This line of sight, C B C, is parallel with the general line of surface, E D (regardless of its sinuosities,) and therefore forms, with horizontal line of sight A B A, an angle C B A equal to the angle D E F, formed by the datum horizontal and the surface.

Now, as the opposite angles of lines crossing each other are equal, the angle A B C is equal to the angle C B A; and we have shown that the angle C B A is equal to the angle D E F; therefore A B C is equal to D E F, and consequently you are enabled to read from the index at C, the angle *converted into inches and quarters*, which is common to the whole distance from E to D. The height thus read off is transferred to the bar B, and retained by the shifting limb G (see the *Woodcut,)* to the edge of which the plummet is afterwards worked. This limb is *only used to* save memory, and assist the *man who cannot read.*

From the explanation given, I hope I have shown that, without any measurement of distance whatever, the average fall of surface is arrived at without any chance of error, if the span of the instrument is always the same, and the indices are accurately made (agreeing with that space) in the first instance. When folded it forms a very portable five feet staff.

Reviews, &c.

Cheshire, Staffordshire, Shropshire, and th North Wales Land Measurer's Rea Reckoner. By Wm. Speed. Gadsby Manchester; Groombridge, London.

This little manual, which proposes t make every man his own measurer, wi be found very useful. Mr. Speed, the com piler, is evidently *aux fait* at his busines and we have no doubt whatever of th general correctness of his calculations; hi instructions to find the contents of grou plots are exceedingly simple, and w therefore, recommend his work to t farmers, as a means of saving them mu arithmetical labour.

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The Veterinarian, for December. Longm and Co., London.

This periodical which we have brought the notice of our readers with a regulari which its great utility to the British far deserves, completes with the number bef us its seventeenth volume, the third of t new series. Amongst the many usef practical papers to which we have fr time to time drawn the attention of readers, we scarcely remember one mo important than *The History of the Glande* which Mr. Percivall now presents to

The glanders is of that class of dise which is fearfully prevalent in the Brit Isles and one from which most farmers h more or less suffered; it is common to countries, and is alike dangerous and tr blesome everywhere. To the professi reader Mr. Percivall's history will be

g, forming, as it does, a compen-
e opinions of the various writers
subject, from LEONARD MASCAL,
in 1587, down to TARDIEU, who
blished his treatise.*

UNGHUSBAND, of Graystoke, has a
Pleura Pneumonia, which he
to two stages, viz., "acute and
." As to the acute form of the
Ir. Y. writes :—

I am requested to visit a patient in
f the disorder (which I have termed
istinction's sake,) and find him with
ptoms of active inflammation, I im-
abstract blood until the pulse warns
t; then if, as is generally the case,
are in a constipated state, I admini-
ive purgative, combined with a small
cture of opium.

er this, the bowels do not respond
e medicine, I frequently administer
of ol. lini and pulv. opii until the
ct is produced; if possible keeping
purgation, a circumstance to be feared
s. After the alimentary canal is thus
d, and to abate any subsequent in-
symptoms, the tartarised antimony,
otas. nit., with hydr. submur. may be
ed twice in the day, but from which
t derived much benefit; because, if
ed in large doses, or continued for
ble length of time, they occasion a
ometimes difficult to restrain.

eral, and lately extensively, I have
q. opii sedativus, and spt. of nitrous
mall doses; giving in the morning,
ls evening, a solution of the hydr.
d continuing the same morning and
ntil my patient either gets convales-
her symptoms induce me to change
of treatment.

ld have my readers to undertand that
onfine myself to one bleeding; but, if
oms warrant it, (which I often find to
two or three times during the disease,)
the vital fluid fearlessly, under the
f that grand criterion, the pulse.

I am called in to a patient in the
stage, and find him with the follow-
toms, pulse weak and wavering—ears,
l legs cold,—with a general chilliness
urface of the body—combined with a
en state of the eye—a purging of dark
fœtid dejections, attended with great debility, &c., offers to us that stage of fever denominated malignant typhus, so characteristic in the low fevers of cattle.

"*Treatment.*—In this stage of the disease to bleed and purge would be unpardonable ignorance on the part of the medical attendant, and to the patient sure dissolution; but if, by any means, I can rouse the dormant powers of life into more active energy, get the pulse quicker and fuller, with other symptoms of *more active energy*, or acute disease—which I have many times done, to the no small gratification both of the owner and myself—by giving the spt. nit. ether. and tinct. opii in full doses, combined with ginger, gentian, carbonate of ammonia, &c. two or three times in the course of the day—in all these cases, if I can rouse the system to bear bleeding, my prognosis is favourable, more so than if I cannot attain that end. No doubt there are cattle that would recover without bleeding; but in my practice, when I have not been able to abstract blood freely, and particularly at the outset of the disease, my patients were either longer in getting convalescent, or never became convalescent at all.

"After this, I pursue the treatment for the acute stage, taking care to vary my prescriptions according to the different symptoms that present themselves."

The writer then proceeds to make a few remarks on the several states of this disease :—

"First, then, in this disease, and in all diseases that I have had an opportunity of treating, I make it an invariable rule to visit my patient as often as possible, consistent with a scrupulous regard to the pocket of my employer, so that I may have an opportunity of witnessing the various changes which the disease undergoes. In the prevailing epizootic I believe that I have traversed as wide a circle for the acquirement of knowledge, both for cattle owners and myself, as most practitioners who have had an opportunity of treating the disease.

"In general, where the patients do not lie at too great a distance, I visit them once a-day,—others as time and opportunity permit, thereby seeing the various changes as they occur.

"In this disease I am satisfied that, if the veterinary practitioner does not visit frequently, pay particular attention when he does visit, and is able to vary his treatment according to the changes in the disorder, heis only incurring a useless expense to the owner, ains no credit to himself, and had better refrain from attending.

"But, on the other hand, no doubt, there are patients taken ill with this disease; and, at the time of the veterinarian being called in, the malady has made such progress and undermined

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Morve *et du Farcin Chroniques, chez*
et chez les Solipèdes, par Ambroise
octeur en Médicine, 1843.

the constitution so much, that any treatment, be it what it may, is useless, and the beast quickly falls a prey to that dire malady. Others, through the negligence of the owner, or perhaps, from a want of paying particular attention to the deviation from health to disease, are not discovered to be ill until too late, and the aid of the practitioner is of no use.

"PS.—In this disease I have always found the preparations of iodine and its compounds of the most essential service, and am positive that I have seen the best effects from their use."

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The History, Structure, Economy, and Diseases of the Sheep. By W. C. Spooner, V.S. London, Cradock and Co. Second notice.

We have before noticed Mr. Spooner's treatise. It is a work we confidently and strongly recommend to the practical farmer, as evidently and pre-eminently brought out for his benefit. The professional disquisitions are plain and intelligible; and Mr. Spooner has the modesty and good sense not to dogmatize—quoting the opinions of other writers, where he dissents from them, he does so in a manly way, by no means assuming that he and he alone is right, whilst all others are wrong. Our former extract was from the first part of the work, which treats of the "various breeds" of sheep; whilst our present notice is of the latter portion of the book, in which the several diseases to which, in this climate, our flocks are subject, are treated at length. There is no more prevalent or more serious complaint to which sheep are liable than *Rot*: it confines itself to no locality, is bound by no terrestrial division,—Europe, Asia, and America, are alike subject to its ravages. Of the causes of it, there are several theories; and however they may differ in other respects, all theorists agree in this—that low, damp situations, or rank food, over which flood waters have passed, are the more proximate.

We have a theory of our own upon the subject, which leads us to the conclusion that either watery food, as suggested by some writers, or that which is tain
the contact of soil, will produce rot
think that the disease may exist w
"*Fluke*," which some writers conte
the *cause* of the complaint, whilst
are as certain that they are the *effec*
Our opinions are formed from the fol
facts:—In the early part of the wi
1842, a flock of ewes were folded o
soiled piece, from which potatoes ha
raised, and they were fed at first w
tops of Swedish turnips from the ad
drills. The weather was wet, and
with difficulty the tops were kep
being soiled. The rot made its
ance, and several died in a few days
being ill. On *post mortem* examinat
flukes were found, in some ins
though in many cases, the biliary
contained a few, every other a
symptom of the disease being pre
One was killed when in an advance
and no blood, comparatively sp
flowed. On a change of diet, by su
ing the roots for the tops of the
and by the addition of a small qua
crushed oats, the ravages of the co
were stayed; but the flock did not
recover till turned out to grass upo
by no means so dry as that upo
they had been folded. Here, then,
rot without flukes in any numbe
without the chance of their egg
taken up with the food, as some
contend; but here was watery fo
that, too, given in a state whic
cause the sheep to take up with it a
tion of soil—always the case whe
are fed on watered meadows in th
try, and in Egypt pre-eminently
after the subsidence of the water
Nile, at which period the Arabs
lose thousands of their flocks. Mr.
however, sets out the various theor
the subject, together with his own
Speaking of the Flukes, he says—

"There are several theories on th
some attributing them to the miasma

situations, believing that the mischief is inhaled by the lungs; others consider that the eggs are taken with the food alone, and that these eggs are only found on the dung of rotten sheep, and that the combined action of the sun and moisture preserve their vitality, and in this state they are swallowed with the grass by other sheep, and are hatched in the stomachs and intestines, and crawl up the ducts of the liver. It is unquestionably the fact that the rot is produced by stagnant water being exposed to the influence of the sun; and that neither a running stream, nor land entirely under water, or quite dry, will produce it. It is equally true that the eggs in countless numbers may be found in the dung. Thus it is seen, that though all agree as to the agency of moisture in producing the disease, there is much difference of opinion as to the particular mode in which it acts: and of the several theories that have been offered in explanation, it will be proper and convenient here to give a summary:—

"1st. We have the theory that the rot is produced by marsh miasma—by emanations proceeding from the soil and entering the system by means of the lungs.

"2nd. The theory which we have mentioned of the eggs of the fluke being deposited with the dung, and preserved from destruction by warmth and moisture, and swallowed by other sheep. Mr. King, in an essay on the subject, considers that the eggs are hatched in the stomach and intestines, and the flukes there hatched crawl up the gall-duct to the liver. This view of the case induces the belief that the symptoms of the disease are to be entirely attributed to the presence of flukes, and is therefore altogether opposed to another theory:—

"The 3rd, which asserts that the disease is solely to be attributed to the taking into the system a superabundance of watery food, surcharging the body with aqueous matter, thus diluting the blood, and producing the train of symptoms that are met with. Such is the opinion of MM. Hamont and Fischer, from whose essay we have quoted; and, indeed, they do not even mention the existence of flukes in the liver, though they appear to have made careful examination of the bodies of Egyptian sheep.

"4th. We must not omit to mention another theory, which is advanced with much confidence as a cause of rot:—"I would beg to say," observes Mr. E. May, of Berkshire, "that I do not think sheep become rotted from every kind of wet land, whether drained or not, but from particular character of the soil and sub-soil, such as is inclined to bog or quagmire, although it may not have that appearance on the surface of the land, but may lie eight or twelve feet deep. Between this subterraneous bog and the surface there is generally a hard stratum of blue clay or sand, tainted with the bog-water lying underneath at that depth; and this infectious water is brought up from the bog to the surface of the earth by means of small pipes, which are always found to form the communication between them, and called by experienced land-drainers bog-pipes. In consequence of this infectious water thus arising to the surface, a plant is produced not of the grass-tribe, but called by some old experienced shepherds the *sheep-rot weed;* and, if sheep are allowed to feed on this land, particularly if in a hungry state, although the weed does not grow more than an inch or two above the surface, and is of a nauseous taste, they will in this state of hunger indiscriminately eat it up along with the grass, and it will, I believe, more or less infect them with the rot. When a hole is made in the land of this description, so as to allow water to collect and stand in it, the surface of the water will in twenty-four hours become covered with a scum, having the metallic lustre of quicksilver tinged with red, and, therefore, probably of an injurious nature.

"Having paid great attention for many years to these points, it is my humble opinion that one great cause of sheep being rotted may be traced to the circumstance of their eating the noxious weed and scum in question."

"With so many conflicting opinions on the subject, it is very difficult to come to a sound conclusion; and, therefore, our own ideas are offered with some doubt and hesitation.

"From the first supposition that the disease is produced by the inhalation of miasma we entirely dissent. We observe none of the symptoms of intermittent or low fever, which in the human subject, are attributed to such cause, but, on the contrary, at first an improvement in the animal's appearance. There are clearly no symptoms of fever or of inflammation, as supposed by M. Hurtrel D'Arboval.

"For reasons before stated, we must also withhold our entire assent from the doctrine which teaches that the disease is entirely produced by swallowing the eggs of flukes, deposited by other diseased sheep.

"And though we believe that the disease is introduced through the medium of the digestive organs, yet we cannot give in our adhesion to the theory that would at once assign it to the large quantity of water imbibed with the food; for, large and detrimental as it may be, it is yet less than is often taken with impunity by sheep living entirely on turnips, in which there is no less than 90 per cent. of water, and yet, although such food is sometimes productive of disease, it is never the cause of rot.

"It appears to me that in addition to the consumption of food in which water greatly abounds, it is essential that this food should be in a state of decomposition (partially rotten), in order to produce this fatal disease. And this view of the case corresponds with the fact that heat as well as moisture is necessary to cause rot, that it is not produced while the land is entirely under water, nor until the rays of the sun have acted on the grass previously saturated with moisture. The disease, of course, may be rendered more or less rapid and virulent in proportion to the amount of water imbibed in the system with the food, and though in all probability the eggs of the flukes are swallowed at the same time, yet it is possible that in the Egyptian cases the disease was too rapid in its progress to admit the development of the flukes in the liver, which we usually find in this country. I believe that the digestive organs is the medium through which they enter the system; but I cannot consider that this is the only source; as if so, land deprived of sheep for some years would cease to cothe, whereas it is known that particular soils will give the rot whenever heat and moisture are in operation at the same time. Though we incline to this view of the case, yet we do not urge it with perfect confidence, for it is not improbable that most of the causes which have been assigned combine in producing the various symptoms of the disease, *i. e.* the eggs of flukes, the superabundant moisture, and vegetation in a state of decay; and, though we cannot limit the cause of rot to eating the *sheep-rot weed*, or imbibing impure water, we believe that the rot is principally produced on springy, boggy, and uncertain land far more than on land simply retentive of wet. In support of this opinion, I may mention that on a farm in my occupation, of a very retentive nature, with a clay sub-soil, sheep have never been known to take the rot, though often kept there throughout the year. Such a soil we well know is unfavourable to vegetable decay. Whatever difference of opinion there may be as to the mode by which the deleterious matters are introduced into the system, there is, and can be none as to the fact of the combined operation of heat and moisture producing it. Numberless facts have sufficiently proved that the rot does not occur on a sandy, chalky, or porous soil, or on land altogether under water, nor if completely dry. But on land retentive of moisture, or having pools of stagnant water, rot is very likely to appear. It occurs in wet summers to a much greater extent than in dry, and it has therefore been much less prevalent during the last few years."

The remedies suggested by Mr. Spooner, appeared in our number for July last,
we noticed the work as about to appe

Horticulture, &c.

PLANTS, WHICH ARE USEFUL OR
MENTAL.—TETRATHECA HIRSUTA.
Tetratheca. (*Greenhouse Shrub*). Tı
draceæ. Octo-Decandria Monog
Messrs. Rollissons received it from
Hugel in the summer of 1843, and flı
it last March. It is a very nice greeı
plant, gay with purple starry blossoı
grows freely in a compost of peat loa
sand in equal proportions, and if
potsherds are mixed with it so mu
better. In summer plenty of air and
should be given, and shade in sunn
ther. In winter the plant should be
in some hairy part of the house, w
will be secure from damp. Fiı
should not be applied, except to k
frost. It may be propagated by cı
in the usual way.—*Bot. Reg.*

CARNATIONS.—The "black spot"
leaves of Carnations is infectious,
gating itself in the same manner as
corn, or mildew on plants. If yo
submit them to a powerful microscoı
will find that they are composed of
merable small *fungi.*

The Markets.

We can see no reason to apprehend a
tensive rise in the price of WHEAT, *tho*
advance must assuredly take place. The
of Northern Europe are closed with ice, a
doubt the case with the great Lake p
North America; from them, therefore, we
in all human probability, receive no suppl
several months to come; add to this the fac
the supplies in the kingdom of foreign whe
small, and the prices of spring corn of be
lity every where high, and we see sufficient
the book to induce us to read an advance in
which we hope will prove a steady one; c
it is that with red wheat so low as 48s.

ley fetches 38s. and oats are quoted
28s. an inducement is offered to apply
grain extensively to purposes to which
try at least, it has not been usually
all, for example, wheat 48s. or 6s.
whilst oats are 3s. 3d. will, for feed-
s, one bushel of wheat go as far as
? The flour of the one has been re-
y the figure 13, whilst the other in
ed 8; in addition to which the nutri-
y of wheat, as is well known, is very
r than oats from equal quantities.

and OATS *are both well sold; the*
rom last year were so comparatively
we are not at all astonished to find
of the former particularly, ranging
as the seed time approaches, higher
o doubt be attainable.

re a saleable article as high as 42s.
l quarter.

ages and duty up to the week ending
ber are—

5s. 5½d., Barley 34s. 11d., Oats
Rye 32s. ½d., Beans 37s. 7½d. Peas
Duties payable thereon—Wheat 20s.,
Oats 6s., Rye 10s. 6d., Beans 5s. 6d.,
Duties on grain from British posses-
f Europe—Wheat 4s., Barley 6d.,
ye 1s. 6d., Beans 2s., Peas 2s. 9d.

BEEF *and* MUTTON *have not alto-*
hed the highest point of price as com-
the corresponding period of last year,
easts as well as sheep are considered
are up accordingly. Coarse and in-
are in better demand, and we observe
at markets clearances have been ef-
ime Beef and Mutton are quoted, to
al, in London as well as in Liverpool,
r lb.; the supply of foreign in the
kets being limited to eight beasts and
ep, from Rotterdam; whilst at the
prevailing easterly winds kept out a
e portion of lhe expected Irish supply.
ty of Fodder, and its price all over
eads us to foretell an extraordinary
butchers' meat of all kind during the
ing.

HOPS *are without quotation, so little is doing in the trade.*

HAY *and* STRAW *are in much request. Oats and barley straw are eagerly sought for by stock farmers. The exceedingly short supply of fodder of all kinds last summer, will lead, in the event of a continuance of hard weather, to higher prices than we have had for some time.*

LONDON, Dec. 30.		Per	Qr
WHEAT, Essex and Kent, new, red		46	48
White	46	50	54
White, old		52	56
RYE, old		30	34
New		36	—
BARLEY, Grinding		29	30
Malting		36	38
Chevalier		38	40
Irish		26	28
Bere		26	—
MALT, Suffolk and Norfolk		58	63
Brown		56	60
Kingston and Ware		60	—
Chevalier		65	—
OATS, Yorksh. & Lincolnsh., feed		24	—
Potatoe		24	25
Youghall and Cork black		23	24
Cork, white		23	24
Dublin		23	24
Black		23	24
Scotch feed		24	25
Potatoe		25	27
Limerick		23	26
BEANS, Tick, new		36	37
Old, small		40	42
PEAS, Grey		34	36
Maple		36	37
White		36	38
Boilers		38	40
SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.			
Linseed, Baltic..30 38 Odessa..43			
Mustard, White...... 6 7			
Brown .... 8 11 per bush.			
FLOUR, Town-made 42 —			
Suffolk.... 33 35 per sk. of 280 lbs.			
Stockton and Norfolk		33	35

◆

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		32	36
Hamburgh		30	—
Rostock		30	—
BARLEY		20	24
OATS, Brew		17	18
Feed		15	17
BEANS	—	24	29

Peas	28	32
Flour, American, per barrel	19	—
Baltic	18	—

LONDON AVERAGES.

		£.	s.	d.
Wheat	5518 qrs.	2	8	7
Barley	6812	1	15	4
Oats	16976	1	3	3
Rye	11	1	13	0
Beans	1347	1	15	4
Peas	1294	1	16	1

SEED MARKET.

	s.		s.
Canary, per qr.	53	to	55
Carraway, per cwt.	44	to	46
Clover, red, English	—	to	—
„ „ Foreign	—	to	—
„ white, English	—	to	—
„ „ Foreign	—	to	—
Coriander	15	to	18
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000	£13	to	£13 5s.
„ „ Foreign, p. ton	£8 15s.	to	£9 5
Mustard, white, per bushel	14	to	18
„ superfine „	—	to	—
„ brown „	—	to	—
Rapeseed, English, per last	£23	to	25
Tares, English, winter p. bushel	5s 6d	to	6 3
Foreign „ „ „	—	to	—

LIVERPOOL, Dec. 28.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℔ 70lbs.	7	3	7	6
Ditto, red	7	0	7	2
Irish white, new	6	6	7	0
Egyptian	5	9	6	0
Oats, Eng. mealing, ℔ 45lbs.	3	3	3	6
Irish	2	11	3	2½
Welsh	2	11	3	1
Barley, Eng. malting ℔ imp. qr.	35	0	39	0
Grinding	0	0	0	0
Irish and Scotch	4	6	5	0
Rye, per imp. qr.	32	0	36	0
Beans, English, per imp. qr.	42	0	46	0
Irish and Scotch	38	0	42	0
Foreign	42	0	46	0
Egyptian, per 480lbs.	34	0	35	0
Peas, English, per imp. qr.	40	0	42	0
Foreign	36	0	40	0
Malt, per imp. qr., fine	63	0	66	0
Flour, English, per 280lbs.	39	0	41	0
Irish	37	0	39	0
Foreign, duty-paid, per 190lbs., U.S.	27	0	28	0
Canadian	26	0	27	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	25	6	26	0
Irish	25	0	25	6
Indian Corn, per 480lbs.	37	0	33	0

PRICE OF AGRICULTURAL PRODUCE

Liverpool, Dec. 28.

			Potatoes.	s.	d.
Hay, best	1s	2d	Short tops	1	8½
Clover ditto	1	0	Red apple	0	0
Green ditto	0	2	Cups	1	9
Vetches	0	0	Cattle	1	6
Straw.			Turnips pr ton	24	0
Wheat	0	5	Carrots	33	0
Oat	0	5½	Mangle	0	0
Barley	0	3¾			

Cattle Markets.

LONDON, SMITHFIELD.

Dec. 23, 1844. ℔ st. of 8 ℔s.

	s.	d.		s.	d.
Inferior coarse beasts	2	10	to	3	0
Second quality do.	3	2	to	3	6
Prime large Oxen	3	8	to	4	0
Prime Scots, &c.	4	2	to	4	
Coarse and inferior Sheep	2	10	to	3	
Second quality do.	3	6	to	3	
Prime coarse woolled do	3	10	to	4	
Prime Southdown do	4	2	to	4	
Large coarse calves	3	4	to	3	1
Prime small do	4	0	to	4	
Large Hogs	3	0	to	3	
Neat small Porkers	3	8	to	4	

LIVERPOOL, Dec. 23.

	s.	d.	s.	d.
Beef, per ℔.	0	5¼	0	
Mutton	0	5½	0	
Lamb	0	0	0	

MANURES.

Subjoined are the prices of several sorts of manure :—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. per cwt.
Guano, 10s. to 12s. per cwt., according quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. per ton landed and housed, 38s. to 42s. per ton
Nitrate of Soda, 16s. 0d. (duty pd.) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per pack sufficient for three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 6s. per cwt.
Compost, £3. 12s. 6d. per hhd. sufficient three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphuric Acid, 1½d. per ℔.
Sulphur for Destroying Worm on Turnips, 1 per cwt.
Sulphate Soda, 6s per cwt.

THE BRITISH CULTIVATOR

AND AGRICULTURAL REVIEW.

FEBRUARY—1845.

our columns of this month will be found continuation of a paper on a subject ch may truly be called “The condition England question.” From the pen of a y young man, its exuberant style may in some measure excused, whilst the portance of its matter renders it deeply eresting to all, and to none more than to landowners. Your mere man of money y transfer his capital to the Belgian ndries or factories as may suit his in- est or his inclination—wherever the field its most profitable employment shall play itself thither he may, with the patch of a genii of a fairy tale, transfer but the owner of the soil, like his sturdy ks, (may they never encumber a hedge w) is part and parcel of the country, and, me weal come woe, he must stand by it, hatever the result: to him, therefore, the ndition of the labouring poor, particularly se employed in agriculture, is indeed a estion of vital interest; for to him their oper employment is meat, drink, washing d lodging, in other words, *it is his income*, hich will be greater or less as the mass of e people are well or ill treated.

Point out an estate where the labourers e, with full employment, well housed and ll fed, and you shew an estate from which e greatest return is being made, with the st unnecessary outlay. Show, on the other hand, an estate where work is scarce, and where the labourers are paupers, and you may be sure that from it the returns are meagre, and the rent roll small. The judges of farms in their report to the *Yorkshire Agricultural Society** well remark:—

“There are many improvements which the land requires in several parts of this country, which ought to be effected by the landlord, in order to enable the tenant to manage his farm in the most profitable manner; we allude to all such as a tenant must leave behind him in case of removal, and which must then become part and parcel of the estate.

“Would the landed proprietors set to work thus to assist their tenants, they would have the gratification of seeing their estates improved, and they would do much towards bettering the condition of their tenants; the tenants would soon be in a position to treat the land in a more liberal manner, by employing more labour upon it, and giving it a greater quantity of manure; the labourer, thus set freely to work, would be able to support himself and family, instead of being a burden to his parish; and the country would be made richer by every bushel of corn thus raised.

“We feel firmly pursuaded, if such improvements as these were fully carried into effect that we should have such an increase in our production, as will enable us, under God’s blessing, to furnish a bountiful supply of food, for the whole population of this country, from our own resources.”

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* *Vide* Transactions of the Yorkshire Agricultural Society, No. 7, 1844, p. 57.

The foregoing remarks must be understood as referring only to the present condition of the country, and to the supply of labour which is even now at every period of the year, except harvest, greater than the demand. What may be the future prospects of our vast and increasing population it were hard indeed to prognosticate.

◆

THE MALT TAX.

Much crimination is abroad upon the subject of the support given or withheld to the very necessary agitation now on foot for the repeal of this tax.

The landlords, as a class, are accused of lukewarmness because their political prejudices in favour of the present ministry will not allow the Queen's government to be perplexed with a deficit so great as would be created by the entire abolition of the tax. The dairy farmers are accused because they do not grow barley. The occupiers of strong wheat soils, and of the grazing districts generally, are accused upon pretty much the same grounds. Now from all this it would appear that there is not that important element of security and strength, "Union," in the agricultural camp.

We have had occasion several times during our early days to see and to deplore that want of unity of purpose amongst the agricultural classes, (landowners as well as landholders,) so absolutely necessary to the maintenance of the power which those classes ought to possess; but upon the recent establishment of the agricultural protection societies throughout the kingdom, we were certainly led into what appears now to have been a delusive hope that the day at length dawned which was to see the great strength of the landed interest put forth in a form to knit, as it *were*, and cemented together by the *common danger* which threatened that *all future* opportunities would be taken *advantage* of, not to protect from aggression merely, but to remove difficulties, and pave the way for the perfect carrying out of this simple justice, viz., *that the British farmer shall be allowed to grow without let or hindrance, and to manipulate for his own use in any way he may think proper, whatever crops may suit his soil.*

That this is not the case with reference to the removal of the malt tax— that the oppression and injustice of prohibiting the farmer to feed his stock upon barley, prepared in the way best calculated to obtain from it all the effe it is capable of producing in the fattin of cattle, should lack support from an branch of the agricultural interest do indeed surprise us. Is the land own doing his duty to his country or himse by standing idly aside whilst this que tion is agitated, because, forsooth, " would embarrass the minister?" up which a word presently; or is the dai or stock farmer, because he does n happen to have his capital embarked the culture of a barley soil and t growth of that grain, doing as he wo be done by in refusing or neglecting assist and promote this common-sen question?—nay more—is he doing as in the case of the landowner his du to himself? Will malted barley, mash down and mixed with chaff, afford, w hay or straw, a wholesome, nutritio and cheap food for his milking cow Will it force milk? We apprehend dairy farmer will deny the fact. Is interested then in the repeal of the m tax.

And now a word as to the embarra ment of the minister, which is made sort of parliamentary reason for t non-interference of the landowners. it likely that the man who, with positive deficit in the revenue on taking office, was undaunted, and wh wise measures have been the me under Providence, of creating a surp

ı his hands, shall now betray a craven
ar, and be unable to make such ar-
ngements as shall meet any probable
lling off in the finances of the country,
ıd that too, without crippling any one
anch of our industrial community:
do not believe it—nay more—we
ost unhesitatingly declare our convic-
n to be that he is equal to the task,
d that it ought to be imposed upon
n.

◆

E ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

e annual country meeting of this im-
tant Society, for the current year, is,
readers are no doubt aware, to be held
hrewsbury.

'he proverbial hospitality of our Salopian
ghbours will, during the week of the
eting, have full scope, and every exer-
ı we are satisfied will be made to give
society a hearty welcome.

hrewsbury has not yet the advantage of
ilway, however, we are satisfied that
ry effort will be made to render the
ıt of this accommodation as little felt as
sible.

◆

FRAME FOR CORN-STACKS.

a late meeting of the Highland and
ricultural Society of Scotland, Mr.
ght explained an improved frame for
n-stacks, invented by J. Stewart Hep-
rn, Esq., of Colquhalzie. The object of
improvement is to avoid the defects of
thel frames as usually constructed;
se defects being chiefly, that they are
lt of much heavier timber than is neces-
y, by which they are rendered ponder-
and unwieldy, and that they are liable
speedy decay from exposure to the wea-
r. Mr. Hepburn has found that stethel
mes of sufficient strength, and capable of
ting, under ordinary exposure, fifteen or
nty years, may be made of small larch
ted with tar, *a tree of six or eight inches'* diameter at the root slit up by the saw, affording four or six pieces for the frame, the two pieces nearest the root being reserved for the exterior circumference. In order that the frame may be rendered easily portable, so as to admit of being put under cover when unemployed, it is constructed in halves, which is easily accomplished by substituting for one strong transverse central beam a pair of light ones, one to each half of the frame, to lie in contact across the centre pillar, the halves being bound together when on the pillars by hasps and staples.

INTONACO, A NEW KIND OF PLASTER.—At the same meeting the Rev. Mr. Innes presented a new kind of plaster, invented by a lady of the name of Marshall, and which she has secured by a patent. It posseses the advantage of drying with great rapidity, and presents a surface well adapted for painting in imitation of marble or otherwise. When used as an ordinary plaster, for which it is not too expensive, it supersedes the use of lath.

◆

DOMESTIC CORN MILLS.—The following is an extract from a letter from the Rev. Robert Moffatt, upwards of twenty years chief foreign missionary from the London Society, dated Kuruman, South Africa, March 7, 1845:—"I must now say something about Dean's Mills. We have used them, and found them far exceed our expectations. They are the most unique articles of the kind I ever saw, and will, doubtless, throw the *Coffee-mill sort, Grain Cutters,* into the shade. The flour it produces is of the finest quality, and after the three kinds are extracted nothing but the most perfect bran remains. We find that the thirds (the coarsest flour) makes finer and whiter bread than the whole of the flour together sifted from meal ground by Coffee-shaped mills. The coffee shaped mills have been tested for twenty years and more in this country; and I speak from experience, and *long* experience. We have found them very useful, however, in grinding maize (Indian Corn). No man, either settler or missionary, ought to leave for this country, and especially the interior, without one of Dean's Mills."

STALL-FEEDING MILCH COWS.

"If it pleases God to bless these motions, and that, accordingly, the national husbandry be improved, we may hope, through God's blessing, to see better days, and be able to bear necessary and public burdens with more ease to ourselves and benefit to society, than hitherto we could attain to."—*Hartlib's Legacy*, 1651.

The history of agriculture, like that of every other science, exhibits several striking instances of useful propositions lost to the community for want of prompt support and early countenance; and of excellent suggestions coming to the ground before they have got fairly on the wing. With the view of endeavouring to secure a better fate for the valuable suggestion thrown out by the respected president of the Manchester Agricultural Society, at its recent annual dinner, and to lead others, more competent than I am, to step forward in support of his benevolent motion, allow me to invite attention thereto, through the medium of your widely read miscellany.

The subject of stall-feeding oxen, and preparing animated oil cake for the butcher, is one of no novelty, for who has not heard or read of the efforts of a Curwen and his cotemporaries in the art, and of the ingenuity displayed by that indefatigable experimentalist in the cookery best adapted for rendering "neat cattle, muttons, and swine," desirably adipous. The inventions of steaming and coddling that distinguished the Curwenian era were certainly new features of the art, but stall-feeding was among the sciences of our forefathers, and claims the highest antiquity. Of this, inferential evidence is found in the pages of several of our old authors, such as the one who in his anger against the anonymous author of a latin satire on his native town (Nottingham), designates him "some *stall-fed* monk;" but the highest authority in support of the early practice of stall feeding will have already occurred to the reader, as furnished in the 15th chapter of Proverbs. Our present business, however, being with stall-feeding of milch cows, not for the benefit of tallow-*chandlers*, but for that of the dairyman, the cheese-monger, and the community, I proceed to observe that when the chairman of the meeting referred to (George Wilbraham, Esq., the present high sheriff of Cheshire) stated, that "a fourth more cows might be supported on a farm by keeping them in doors," it was impossible not to notice some surprise on the countenances of many of the company present, and still more when Mr. Wild, of Weaverham, subsequently stated, that "by stall-feedin he estimated that he could keep two co where he had before been able to keep b one on the pasturing system," I subsequently found, that while some inclined t question the accuracy of this assertion, t not a few the subject was altogether ne My friend, Mr. Wild, however, is support in his theory by practice and experime the result of which he might have v beneficially reserved to himself, but whi with praiseworthy public spirit, he has l open for the general good in Mr. Dix recently published interesting sketch "Cheshire Farming," to which I refer y readers, instead of quoting the particul simply because I do not think it righ the present moment to extract into a p lar journal a highly interesting feature a newly printed work of only local inte when its sale (which must in a great gree be local) might be thereby affect and has Mr. Dixon's pamphlet may be for the price of half a score cigars, I t you will agree with me that the dairy mer who will not spend half-a-crown subject involving the reduction of ha year's rent, is not entitled to such a tended use of your valuable space, an my humble amanuensian powers. T are, however, Lancashire and Che farmers who will both buy informatio read and reflect—who will test where t is fair ground for experiment, and impr where improvement is to be made. To I venture, with satisfaction, respectfully address the present observations, tend to shew that soiling or stall-feeding m

io new crotchet of the present day
experiment and Whitfield adven-
unsupported theory, but one in
fr. Wilbraham, Mr. Wild, and
on are countenanced by authority
highest character, supported by
equally deserving candid consi-

I am led to believe that soiling
-feeding milch cows is a method of
g them not very ancient, though
novel. Had it been in practice in
ı's days, we should no doubt have
dissertation upon it by the agri-
writers of that period, and un-
ıbly a chapter would have been
to it by our English Varrow, honest
in his multifarious "Boke of Hus-
' In his time vast tracts of the
vere open, "champagne" or "cham-
it was then called, and the trouble
d with the care of cattle must
n great accordingly; the enclosures
counties being something like Ro-
rusoe's first attempt at a park for
; the young stock must have been
s if they had the whole island to
rer. The herdsmen of Tusser's
those of Sweden and Norway at
nt time, were accustomed to call
milking kine, and other depastur-
, by the aid of a "lure." In the
ıntries this is a long instrument
wood, in the form of a cone or
d having the monotone of a sing-
-pipe or organ tube, whose deep
is not altogether unmusical. In
days, the English lure, (still to be
asionally in the midland counties)
s melodious instrument, being in
ıorn of some deceased member of
, thus rendered far more useful
ın I conceive any horn could be
re. In many of the more south-
ıties, enclosures were numerous,
ese milch cows, like other stock,
have shifted for themselves as
hey could, being fed in winter,
ass altered its mode of growth and "*grew* scarce,") on hay, straws of various kinds, and all manner of procurable haulm, twigs, &c., their "board" being oftentimes procured from timber trees, and their "lodging," a good deal of it, "on the cold ground;" in reference to which, old Tusser thus writes:—

Where cattle may run about roving at will,
From pasture to pasture, poor belly to fill;
There pasture and cattle, both hungry and bare,
For want of good husbandry worser do fare.

Friend alway let this be a part of thy care,
For shift of good pasture, lay pasture to spare,
To have you good feeding in bushes and leaze,[*]
And quickly safe finding of cattle at ease.

His instructions for the month of January are as follows:—

If frost do continue, this lesson doth well,
For comfort of cattle the fuel to fell;
From every tree the superfluous boughs:
Now prune for thy herd thereupon to go browse.

In pruning and trimming all manner of trees,
Reserve to each cattle their properly fees;
If snow do continue, sheep hardly that fare,
Crave misle' and ivy for them for to spare.

In the depth of winter it appears that the stock was still kept "out of *doors*," and foddered after the above fashion; indeed, *doors* were quite out of the question, for there appears to have been very few shippons or cow-houses, and the stock, generally speaking, were "out-patients;" the only "in-patients" being the aged and infirm, or those preparing for the butcher. Nor does it appear that the systematic housing of milch cattle, as being preferable to pasturing them, ever occurred to Tusser or his cotemporaries, although, when penning the following lines, he held in his hand the main arguments in favour of soiling and house-feeding either in summer or winter, thereby reminding us of some of the Roman emperors who signed their names with a block or wood-cut, and yet the Romans could not reach the art of printing. In this curious passage he says—

The housing of cattle, while winter doth hold,
Is good for all such as are feeble and old,
It saveth much compast[†] and many a sleep,
And spareth the pasture for walk for thy sheep.

For charges so little much quiet is won,
If strongly and handsomely all things be done,
But use to untackle them once in a day,
To rub and to lick them, to drink and to play.

[*] Small field. [†] Manure.

Notwithstanding this before-named rough treatment and fare, compared with the greater care bestowed by some upon these valuable animals in modern times, and the aid of turnips, steamed food, &c., it appears that the profit upon a milch cow in Elizabeth's days, was with good husbandry, a pound per annum, and that a good sow was equally profitable.

> Good milch cow, well fed, and that is fair and sound,
> Is yearly for profit as good as a pound;
> And yet by the year have I proved ere now,
> As good to the purse, is a sow as a cow.

This sum (as stated by Dr. Mavor, in a note in *loco)* would be equal to £10 of our present money, no inconsiderable profit per cow per annum; but it is a fact, not generally known respecting "the golden days of good Queen Bess," that, within a quarter of a century prior to 1581, the prices of farm produce more than doubled. Cheese and butter, it appears, were then almost universally made from the same milk, the only way, as Dr. Anderson has clearly shewn, to have each good, and in which lies the true secret of the far-famed Epping butter; for where no cheese is made the butter cannot be the *best,* and where no butter is made cheese can never be sound, however fat, the caseous and butyraceous particles of milk having *no* affinity for each other; on the contrary, as soon as they leave the cow's teat, they try to part company, and all the cheese presses in Cheshire cannot reconcile them to each other. Butter and casine are distinct productions of nature, and we cannot have them *both* good in either Cheshire or Glo'ster cheese, whatever nonsense epicures may talk about their "toasting fat," &c.: a cream cheese will toast fatter still, though in reality no such paradox as *cream* cheese can exist. There may be solidified cream; but cream will no more make cheese, strictly speaking, either by itself or in conjunction with milk, than hog's lard, or any other animal fat.

But to return, the dairy season for cheese and butter began, in Elizabeth's time, on April day, and continued till the 30th of November:—

> "From April beginning, till Andrew (St. Andrew) be past,
> "So long, with good housewife, her dairy doth last."

The very little improvement that is to be seen at the present day, in the management of dairy cows generally, checks any inclination to censure *Tusser's* husbandry, nothing being more common than to see herds of superior milch kine exposed day and night to all the rapid changes of our variable clime, and those extremes of temperature that characterize our island, "rich queen of mists and vapours;" and this in spite of the fact, that a change of wind will check the milk, and that a cow kept shivering in the cold, with her hair at right angles with her hide, must secrete less of that valuable fluid than if made comfortable, and must require considerably more sustenance, in order to keep up the heat of the animal system let off in greater quantity into the surrounding atmosphere. However the landscape painter may smile at my want of taste, I confess I can scarcely witness without a smile, (and, perhaps, at times, a groan,) the practice (arcadian and picturesque though it be) of cows being milked in wind or rain, or sometimes burning sun in the open air, when there is a cow shed or shippon on the farm; nor can I see the laborious toil which this imposes on the dairy maid (who might get her milk so much nearer the dairy door,) without thinking of the fun that Pat picks out of "the same:"—

> "Och three maidens a milking did go,
> And the winds they blew high, and the winds they blew low,
> Aud they dashed their milking pails to and fro," &c.

I can hardly suspect this antipathy of mine to be the mere effect of early prejudice and education (although my father as well as my mother, both good dairy hands, entertained it before me,) because I find myself equally confirmed in my present views by the difficulty there is in answering the reasonings of practical men, who have proved them correct.

On this part of our subject, one of these
rites as follows :—
“January 27th. Notwithstanding the
ry miserable opinion I entertain of the
riculture of the greatest part of the king-
m, I meet perpetually with circumstan-
s which surprise and astonish me. In
re than one instance, this morning, I
v the cattle milked *in the fields*. *That*
k should be scarce and dear under such
tment is not to be wondered at. The ge-
al practice is for the milch cows to lie
the fold yard. If cattle kept in houses,
ler cover, with every precaution against
d, are affected by any considerable
nge in the atmosphere, how must it
with them that are exposed to all its
ence?”
his remark is by no less a judge of farm-
matters than the great Christian Cur-
, and stands inserted in one of those
irable productions, the Workington
icultural Society's Reports. Although
ted in 1812, it is, at an interval of 33
rs, still applicable to some parts of the
ntry. It does not apply to Cheshire,
it is sincerely to be hoped that Cheshire
apply it, and mend its management in
r respects. *Exempli gratia:* for in-
ce, I found myself in a Cheshire lane,
ground covered with a snow, contem-
ing a stock of as fine dairy cows as
shire can boast; their occupation at
time was shivering in the frosty air,
looking alternately at the ground and
onsolately at each other, as if to say,
hat *are* we sent here for?” certain as I
that those of them that were in milk
ld, under such unfavourable circum-
ces, yield the fluid on which their
er's rent depended in exactly the same
o as their hides were in harmony with
thermometer; I was about to indulge
friendly invective suited to the occa-
, when the farmer's man (an Irishman)
ing up, the following colloquy took
e between us :—“ What's your master's
t in sending the cows out this weather?” “Faith, thin, yer honor, I can hardly tell yez, unless it be for exercise and to stretch their bones.” “But they seem more anxious to exercise their jawbones than any other just now.” “That's thrue for yez, master, but most of 'em are in calf and thry, and we don't mind 'em much just now.” “And does your mistress take that sort of care for her breeding sow?” “Why, that's thrue for yez, she doesn't, and I can't for the life of me tell why is the difference, unless it be to make the calves that are coming hardy.”—“Where's the bull, Pat?” “The bull, is it? Faith yer honor doesn't suppose the master 'ud be letting the bull out such weather as this.” “Why, Pat? does he milk the bull?” “Ha, ha, ha, no yer honor, but he makes as grate a bother about him as about twenty cows, and worships him more than they do a Pope's bull in my country.”—Proposing to continue the subject, I remain, your's respectfully, *Hark! Forward!*

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SCOTCH FARMING.

Referring to the remarks which fell from Col. Rawstorne, at the last annual meeting of the Preston Agricultural Society, on the subject of Scotch and Lancashire farming, and which we noticed at length at the time they were delivered, we are not at all surprised to find that a controversy has been carried on for some time, through the medium of the *Preston Chronicle*, upon these subjects. There are perhaps no two districts in England where a greater extent of inferior grass land prevails than in the counties of Lancaster and Chester; we, therefore, anxiously call the attention of our brother farmers in those counties to the following letter which concludes the controversy to which we have above alluded :—

In the much criticised speech, at which I happened myself to be present, it was attempted to be proved that the arable system was much more profitable than the grass system; and further, if that be the case, to keep the poor pastures that were so general throughout this county in the state they were in was an injurious and therefore a wrong proceeding.

The East Barn's farm was then instanced, which being 480 square acres, let for £2,800 a year. Whereas, land with us of the same quality, such as on the Clifton marshes, would only give £2 a year rent. This statement of facts being uncontradicted, it becomes a curious matter for enquiry how this extraordinary difference betwixt the two rents arises.

The solution is found, not in the difference of the land, but in the difference of the two systems. It is well known, that in the best farmed parts of Scotland the whole land is under the plough; and thus, being well cultivated in that way, it is made so much more productive than any grass land can possibly be; and if this be the case in that instance, what must it be with the poor pastures with us. If any further opinion is wanted upon this point, it may be well to refer to an article in the *Gardener's Chronicle* of December the 14th last, which is very applicable to our present farming condition. It is there stated, "In illustration of this, viz., profit, produce, and labour, on a moderate estimate, on that half of the grass which, on the alternate system would be under turnips and clover seeds, you may keep quite as much stock as the whole in bad grass would keep. We should in addition have the other half in corn, and this would be so much clear gain to the country, and would be equal in value to at least three times the former produce of the whole in grass." Again, "We have no hesitation in affirming the truth of the position, which has been publicly propounded, that the interests of the community require that the change from the pasture to the arable method of cultivation should be extensively adopted on the medium and inferior lands of the country."

If any further confirmation were wanting of this sound agricultural doctrine, it might be found in the enormous profit that in some instances has accrued from the produce of arable land. Many years ago, before the turnip culture grew so common as it is at present, a customary acre of turnips near Liverpool fetched £140, there being upon it 70 tons, which sold at £2 the ton. This amount of produce will not appear so extraordinary if we examine the following statement:—A statute acre of turnips, each being nine inches apart in the rows, and the drills twenty-seven inches broad, will produce in number 25,812 turnips, which, each of them averaging 2 lbs., will give 23 tons 104 lbs. per acre. But the weight here is placed extremely low, and the land must be poor indeed which will not give them of that size. In our good marsh soils, than which there is no better in the kingdom, they may be grown more than three times that size. Let these be sold at £1 the ton, or carted to Blackburn, where they are said now to be fetching £1 5s. the ton, and what a return is here! At a late sale near Preston, something more than two acres, customary measure, of turnips sold for £70. A crop of potatoes likewise, in a year when there has been a great failure, and the price has risen in consequence to 10s. or 12s. a load, has been known to have fetched as much as the value of the fee-simple of the land was worth.

Well, then may we exclaim break up your poor pastures; let them undergo a thorough renovation, and afterwards be either laid dow again in proper form, or else continued und the plough. Until this be done, a truce t profit, a truce to improvement, and still mo to your reputation and fair fame as farmers. I you lay such land down again, you will ha fresh grasses of an improved quality, either f feeding bullocks, affording succulent food f milk cows, or, what is more profitable, giving sweet and early bite for ewes and lambs. In populous district like our own, where there such a constant demand for milk and butt and where our holdings are small and m divided, the mixed plan of husbandry, with p in grass and part under the plough, is perha most desirable. If, on the other hand, y determine on continuing this part under t plough, you have extraordinary facilities hand for preserving it in good heart from cheapness of manure near a large town. T use of the new manures, and, most of all, guano, has afforded a great additional aid. So have doubted its permanent effects as a fertili but none its stimulating properties. Mr. G of Dilston, says he has tried it with tur using one half the usual quantity of horse du and one half of guano, and that these two to ther have not only given richness to the but durability in the effects.

Some, and those intelligent persons, h much doubted the utility of introducing amo us the Scotch system, now under discu and as a proof have instanced a case in Ox shire, where a large landowner procured a p son conversant with it from Scotland, broke the whole of some fine grass land, and la under the plough. This, it is said, prove perfect failure, and the consequence was, t the land had to be returned again to grass i greatly impoverished state. But unless we acquainted with all the circumstances atten the operation that took place, it is impo that we can judge fairly of the merits of case. It does not necessarily follow, that th this manager came from Scotland, he was q *au fait* at his business. Mr. Pusey seem have gloried (not very decorously perhaps) th he discovered some bad farming in Scotland.—As well might we suppose, that because education is more generally diffused there, they are all wise men. Doubtless there are both fools and bad farmers in that country, and we need not travel far out of our road to find the same here. In regard further to the failure alluded to, it may have arisen from the land not having been drained, and if that were so, and if it was of a stiff nature, such a result must have necessarily followed.

Without meaning anything disrespectful to our present race of farmers, I am decidedly of opinion that with us, agricultural science is quite in its infancy. Take, for instance, the draining of stiff clayey land. Mr. Pusey says, that a man must be out of his senses who would take a farm of that kind, unless it had been first drained. No one, who has not tried it, can be a judge of the effects produced by thorough draining, with double trenching or subsoiling, on land of this description: its very nature is changed by it. Instead of its forming a solid adhesive mass, loosened and broken into parts with difficulty, and running together again in heavy rain, it becomes mellowed and friable, capable of bearing with advantage any crop that requires a well pulverized bed, whether of turnips or barley. Instead, then, of having a fallow every third year or so, which is necessary, if not o prepared, you have its substitute, and that, oo, an ameliorating crop. Without comparing crop with crop for a series of years, on the same and, drained or undrained, which, of itself, would make an enormous difference, you have here the saving of a fallow, or of your land ying idle every third year, which, in fact may be said to be a saving of 30 per cent and upwards.

Look again at your farm-yard system. Your buildings here are neither constructed as they should be, nor is the management in them such as is most likely to lead to the main object—the raising of manure. In a late number of the *Gardeners' Chronicle*, the management of a Farm-yard, belonging to Mr. Spooner, M.P. for Birmingham, is described which is highly deserving attention. The farm is from 150 to 200 acres. Mr. S. grows the most luxuriant crops, without having expended a single shilling for manure, (except a trifle for those lately-introduced novelties, by way of experiment,) but has old much farm manure to his neighbours, not nowing how to dispose of it on the farm. The onstruction is thus described:—"There is tanding for upwards of twenty milk cows, which kept full all the year round; in the summer ey are fed with tares, Lucerne, and grass; in e winter a little hay is given them in the orning, Swedes or Mangold at noon, and as much bruised gorse (furze of one year's growth) as they will eat. In the centre is the manure pit, six or eight feet deep, covered by a roof, and surrounded by a dwarf wall, so as to prevent the possibility of any water getting into it. It is entered by an inclined plane, wide enough to back in a cart, opposite the approach to the yard. Into this pit the dung from the stables and cow-houses is promiscuously thrown. In the middle of this side contiguous to the latter is a well and a pump, which receives the drainage therefrom and the stables, which is pumped up and spread over the manure by a shute. The surplus liquid that is not absorbed, is drawn off by means of a drain under the barn into a receiving well in the stack-yard, where it is pumped up into the liquid manure cart and drawn out on the mowing ground, as soon as the grass is cut, until such time as it is laid up again. In the spring, it is otherwise disposed of on headlands and heaps of soil. Liquid and solid manure, prepared in the way above described, preserves all its nutritious qualities; the one is not diluted by water, and the other not suffered to deteriorate by over heating, and is of treble value of that made in the common way."

Amongst our old farm buildings it may not be possible to reconstruct them with a due regard to the different objects which are here so well effected. But no farm-yard should be without a well or tank, with a drain from it, conveying the overflowings into a reservoir, into which should be cast bog or alluvial soil, or any kind of refuse, to be mixed together and carted on the land, after having been properly soaked in the liquid. The advantages of the farm-yard system will of course be much augmented by the cattle being kept in the yards during the summer time, as is done here. There has been a good deal of difference of opinion, whether they thrive better in loose sheds, or when tied up; but one thing is quite certain, that they make much the most dung in the former method—perhaps three or four times as much.

The use of spade husbandry is also so nearly allied to the arable system, that it cannot well be separated from it. Its value is little known, and it is therefore not so extensively practised as it should be. Experience has shown that it may be profitably applied in double-trenching land at so much per rod; but some have even gone so far as to say, that in a great measure, it may be introduced as a substitute for the plough. The valuable little work of Dr. Yellowley strengthens this opinion. He shows that on a particular farm in Suffolk, the number of horses had, through it, been reduced from twelve to seven; the work better executed, the profit arising from it greater, and employment given to many hands. But it is most valuable in the allotments, both of the larger and smaller size. In the former, consisting of from five to six or seven acres, it provides full employment for a large family, which perhaps cannot be obtained in any other way; it places the occupier in more affluent circumstances, and brings a larger and more certain rent to the owner, when properly conducted, than he could obtain without it.

As to rent, I make bold to say, that the amount of that is not of so much consequence to the tenant as is generally supposed; and further, I feel fully satisfied, that it is much easier for a good farmer to pay £6 or £8 the acre, than it is for the bad one to pay £2 or £3. Every crop, whether good or bad, can only be raised with a certain outlay; but if land be once got into really good order, it takes little more expense or labour to grow a good crop than it does a bad one. Let us, for a moment consider what the difference is in the result betwixt the two, as regards profit If only five windles per statute acre be grown, there are the same taxes the same number of ploughings and harrowings, or perhaps more, and the same seed is required, as if, on the good land, ten windles were grown. But in the first case, all, or perhaps next to all, the profit is swallowed up in the outgoings: in the other, all beyond a certain amount goes as clear profit into the pockets of the farmer. This makes the growing of a bad crop of wheat the worst thing that can be done in the whole range of farming. It makes the tenant poor; he scarcely knows why; and he may be said frequently to be almost starving amidst plenty.

I have now touched upon the leading heads of the arable system; not for the sake of controversy, but to prove coolly and dispassionately, that the benefits to be derived from it are great, and almost incalculable. If pains had been taken to investigate the whole process of this system, its extraordinary capabilities, its nice and various operations, the skill required in the working of them out, by a combination of science and practice, such an enquiry might have been made one of the most entertaining, as well as beneficial, of any subject that could have been brought before us. It might also have been the means of converting places that look waste and desolate, and only the fit habitations of the snipe and lapwing, into luxurious sheets of waving corn. The first step to improvement is, to be made sensible of our own defects; but some there are, who are wilfully blind; and none, they say, are so blind as those who wont see. If the comparison may be allowed, they are like Lord Nelson at the battle of Copenhagen, who, when he was told that the signal was flying for his recal, put his spy-glass up to his blind eye, and said, I cannot see it. For these there are no hopes of amendment; as the poet has told us that,

> The man convinced against his will,
> Is of the same opinion still.

I remain your obedient Servant,
January 1st, 1845. VIATOR.

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AN ENQUIRY INTO THE CONDITION OF

THE ENGLISH PEASANTRY.

BY AN EX-FARMER'S SON.

(Continued from page 5.)

By the editorial notes appended to my last communication, it appears that the pictures of the distressed condition of our rural population, pourtrayed in that article, are represented in rather an exaggerated form. Though the colours may perhaps be very glaring, and the design rather imaginative, yet I am convinced that there was nothing drawn out of character with the present condition of its distressed subjects. That there is a distressing evil, none will attempt to deny; and it is not through lukewarmness that it can be remedied.—Popular delusions must vanish before rapid strides can be taken in any reform; and so long as the people are deluded by the false idea that things will come round* by a na-ural course of events, little assistance can e expected towards its attainment.

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* We confess we are rather at a loss to understand what our correspondent here means by coming round. If the condition of the agricultural labourer be worse now than it was at the corresponding period of last year, or the year before, or the year before that, or in short at the same period of any year since the time of high prices during the war, then indeed we might talk of some course of events which should either of themselves, or by the aid of human action, bring about results different from those we now witness. But how stands the fact? The rural parishes in England have increased their population within the last ten years by a fifth; and though during that period an immense amount of labour for the poorer classes of that population has been provided in the formation of railway lines and other public works, yet the condition of the labourer is not progressing, not so much for want of wages as for want of work. Everybody knows, who knows anything of the matter, that 12s. per week now is equal to 15s. formerly. The evil can hardly, therefore, be said to arise from the

"Facts speak volumes;" and as a *proof* the alienation of feeling existing amongst e labourers in the rural districts, an in- nce is fearfully striking in the fact which been reported upon the pages of most blic papers, of an incendiary fire in rtfordshire at which "the labourers refus- to assist in extinguishing the flames, and ld hardly be prevented from setting fire portion of the premises not in imme- te danger. The clergyman of the parish present, and did his utmost to put out flames. He exhorted the labourers to p; but they not only refused, but they so, using the most offensive and insult- expressions."

his and other similar facts, though not wn in such a glaring light, must set the nking portion of the community in a y towards the development of some plan an effectual remedy for such scenes. I but young to engage in any matter of h serious importance, yet the really titute condition of our rural population general is becoming so very alarming, t it behoves every one to use his utmost deavours to check its overwhelming reer.

Though the incendiary fires may be put wn to the gross ignorance of the parties, t there must be some cause or they uld not exist; and the enquiry is, how is they do exist? and in what way it can remedied? That a remedy *must* be found is evident, or there will not much longer be any security for life and property. The peasant must be supported—the law will not allow him to wholly starve and die; and it lies in the breasts of the landlords, through the hands of their tenants, whether he is to be supported in such a way as will lead to the advantage of all classes of the community—landlords, tenants, labourers, and the public; or he is to be supported by the rates raised from their own property, adding burdens both upon themselves and their tenants, and leaving himself and family a batch of miserable, broken-spirited, helpless paupers and beggars.

Human nature has a sad propensity to prefer what is called generosity to justice. It can be seen of men, and applauded by them. Its trumpet can be sounded upon the public platform, and emblazoned upon the broad pages of the puplic newspaper. It gratifies pride, and flatters the weak-minded, by the homage that is rendered to its shrine. Though political economists may be called "hard-hearted utilitarians, unsocial, and cold-hearted Christians, having no charity in them, and submitting the existence of their fellow men to some established rule by which they are to abide;" yet these ignorant calumnies can no longer be held forth and established, when brought before the keen searching eye of truth and justice. Justice is only known by its fruits; it is silent in its operation, but certain in all its effects. Let the labourers be put in the way of providing for themselves, and they need not charity. Untie their shackles—set them free as free born citizens of the world, and enable them to procure an adequate reward for their industry,† and there

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ere sum received as wages. That the con- rtible system of husbandry will afford a much eater amount of farm labour is true, but yond a certain point even this cannot be rried; and to ensure this to the desired ex- nt, a remunerating market must be found, e capital will not be embarked in it. The estion appears to us beset with difficulties, hich arise, as we have often before had occa- on to observe, partly from the Fiscal and cuniary arrangements of the country, partly om the habits of our labouring population, hich are in a great degree engendered by ano- er important difficulty, viz. our climate.—Ed.

† Our correspondent is, we take it, a student of political economy; he must be aware, therefore, that the value of labour, like everything else, is regulated by the unalterable laws of supply and demand: how then does he propose to enable the labourers to obtain this "adequate reward" We admit that the restrictive policy which prevents the free growth of any crop for which our soils are suitable interferes with the

How is it that in this great, enterprising, and wealthy country, the soil is not properly cultivated, and the labourers half employed? It simply results from this—that there are arrangements made between the owner and occupier, which utterly preclude the proper culture of the soil. The tenant farmers require an alleviation of their burdens, and that alleviation can only be gained from the hands of the individual landlords. The most of them are only tenant's-at-will, ready to be expelled at the will of the landlord or his agent. Though this is perhaps seldom done, yet there is no security from it. They are safe only so long as they accord with the wishes of their landlords. Any petty breach of the game laws, or not rendering sufficient protection to the game, may drive them from their farms and their homes. They are prevented from exercising their independence even upon the most trivial occasions.—Bound to support their landlord's views and opinion, upon all public questions, with their voices and their votes, without regard to their own opinion or consciencious convictions. Though for these considerations the rents may, in some instances, be a trifle less, the tenant is only allowed one part of the land for which he pays; the other being occupied by his landlord's timber, and huge hedges and ditches.

investment for capital is thought o farming improvements—the fact be there is no security for it. No man will lay out capital upon i ments, without a stable guarantee ordinary confidence reposed in lan not sufficient. Though he may per a considerate man, and may not fence at trifles, or advantage of provements made by the tenant, y is no security: he may die, and may take advantage of them; and himself *may*, if the *will* chances possession of him. The estate may and of course the purchaser pays th for it as he finds it, and expects accordingly, without there are agreements specified in the condi sale. There are a thousand chance if a yearly tenant makes any improve unless under favourable circumsta which all are not in the enjoyment. are a many good farmers who ar yearly tenants: but these are unde liar circumstances; and even they be greatly benefitted by the posses a lease.

Security of tenure is universal manded; and that security can o found in the establishment of long But prejudices are to be removed these can be obtained, and obstac moved before they will be acce Tenants will not engage to pay a fix for a long term of years, without so of security from excessive fluctuat

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demand for labour, and this is all—change this system, and with convertible husbandry all that can be done, short of eleemoysinary aid or emigration, will be effected.—Ed.

e price of produce. And this is reason- le and prudent; for, under a fixed money nt, if markets rose, the tenants would joy the advantage; but if the markets :re depressed, the tenants would suffer long as they could bear; but ultimately e leases would have to be cancelled, and sh arrangements made.

As a security from these fluctuations, ere is no alternative but in the adoption corn-rents. The principle of a corn- nt is, that the tenant should pay accord- g to the price of his produce, and not cording to the quantity and quality of it yond a certain point, and the landlord uld receive all that he is entitled to, viz. air settled portion of the produce, esti- ated according to the productive quality the soil, at its average market price.— nts were once paid in kind, and in anging that payment to money, it be- ves an arrangement so as to produce the me results. It is but common justice at rent should fluctuate according to the ice of corn. If we allow a certain por- n of the produce of the soil to belong to e landlord for rent, we must fix such a stem of payment as shall give the land- rd his proper share—nothing more nor ss. In order to accomplish this, there e various circumstances to be considered, the fluctuations in the price of produce, d the variations in the amount of pro- actions through the variation of the sea- ns: yet the plan is simple and practica- le, when put upon a proper footing, by e means of corn-rents equitably adjusted.

n these considerations there are two points which corn-rents would be equally ad- antageous to landlord and tenant—one in hich the landlord would have the advan- ge—and one in which the advantage ould be upon the side of the tenant.— pon these grounds, then, they are equally alanced. If prices are low from a limited emand, there is a reduction of rent— either landlord or tenant having any ad- antage—both sharing in the general depression. Upon the same grounds, if prices are high from an increased demand, there is an increase of rent—both sharing in the increased prosperity. When prices are high from a scarcity of production, the tenant would be the sufferer, having more rent to pay with less produce: though prices were higher, they would not be sufficient to compensate him for his deficiency. If the prices were low from an increase in the production, rents would be lowered, and, consequently, the tenant would enjoy more produce at a less rent, and of course the landlord would be the sufferer.

The plan, then, remains to this—let a certain amount of produce be fixed upon the farm (such as is considered fair upon an average of seasons, the condition of it being taken into account), to belong to the landlord. This produce should then be converted into a money payment by the average market price of it. That average might be taken from the prices of one year or more, just as the parties may agree. If it were taken for more than one year, the fluctuations would not be so sudden, and would perhaps be more advantageous—the payment being more equal. Upon the other hand, if the average was taken from too long a term, the result of one year's rise or depression would be too long in being felt. A medium term of three or four years would generally be found to be most acceptable.

With regard to the number of years a lease might be extended, the longer it were, to a reasonable extent, the more advantageous it would be found. In the first place, I should say, let a lease be made to extend to 21 years, with these conditions—that at the expiration of the first 14 years, the parties agreed to whether another lease or term should be granted or not. If it were agreed that the tenant should continue upon his farm, he would then have a security for continuing any improvement he might wish to make, without, as is the common practice, previously to the expiration of a lease, of relaxing in his exertions, and obtaining what crops the land would produce without any extra outlay, the tenant not knowing whether he may be allowed to continue upon his farm or not. —E. R. *Winwick, Jan.* 22. 1845.

(To be continued.)

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AGRICULTURAL SOCIETIES.

At a recent meeting of the Doncaster Agricultural Association, the Chairman said that on a former occasion he had taken the liberty of proposing the formation of an agricultural society for this town and neighbourhood. It was to be on a new principle; and, on this subject he could not do better than read the letters he had received from the secretaries of the Yorkshire and the Northallerton Agricultural Societies:—

Thorpfield, Thirsk, Dec. 11, 1844.

Sir—I am always most happy to forward any proposal for the advancement of agriculture, and gladly accede to your wishes to give you the information in my power respecting our Thirsk Association, and have ventured to add a few remarks on your plan generally, as your letter hinted I was at liberty to do.

The annual subscriptions to the Thirsk society, amounted to about £150 to £160, and consist of all sums upwards of half-a-crown: the only difference between members and non-members being a free admission into the yard, and a lower rate of entry for stock. Ten shilling subscription constitutes a member. The amount we offer in premiums is nearly the amount of subscriptions, (about £145), the casual expences of the show, &c., being defrayed by the monies obtained for the admission of stock and the public. These, I think, are the most material facts connected with our society.

You appear to have struck out a new idea in your society; and it appears to me in its present form to be rather a means of supplying your members with good male animals than for opening a reward for stock improvement generally. While I am persuaded that all local societies will soon go down, unless something *be done of an entirely* novel description, to keep
up the interest, and make them usef
almost apprehensive that your rules
vent very first-rate animals from bein
ted—i.e. you will not be able to give
breeders sufficient remuneration for
and dispossession, so to speak, of thei
If it could, however, be accomplishe
would compete on the terms, the distr
be very much benefitted, and if yo
make the experiment at the risk of
you will deserve great praise. In the
Society we found it necessary to thro
restrictions,—we fancied that they
against our exhibition.

The principle of sweepstakes I
dislike; it is generally getting into
and is not a very allowable means of
up a small reward fund. It seldom a
object, and the Thirsk society aboli
altogether. A small silver medal,
engraved with the date, name, and
name, may be had for 10s, and is o
thought of, and serves a much bett
than any sweepstakes. Female anim
very appropriately be rewarded by the

The subscription of £1 to constitute
is, I think, too high for a local socie
idea of giving occupiers, at half th
owners, the same privileges, is one o
ideas I have met with in agricultural
but, I repeat, I think the sum is too h

If you intend to give the stewards a
post, it is a positive evil to render th
gible for re-election. Officers who kn
their duty ought never to be dismiss
were an honorary post their removal i
desirable. I think there are too few
to be resident in the town of Doncaster
members are often very useful on com

Your time of closing the entries is
before the show. In a local society w
it be more than ten days, or even a we

The secretary ought to have the
summon the committee; the president
members.

Implements are a most valuable a
to an agricultural society. If the soci
to devote a sum to be expended by t

ments in such as they most approved hese where given as premiums to the l exhibitors of stock, they would make amount of money go double the way . Suppose £40 were devoted, the im-maker would obtain the prize, and, what also sell his implement. The exhibitor tain the implement—often more useful an the money, and the honour would me. If thought desirable this might at one show, or the implements might ed at one show, used by the members r, and offered the next. You should de practical farming; could you not a library, and appoint a quarterly for discussions of practical points? ice I can render shall be readily given. tude for the kindness of my Doncaster ral friends has not yet escaped; and I ear of the success of your society and of the mode in which you finally principles; and if I can ever render es to you, I need only be asked to do nain your most obedient servant,

son, Esq. **MATTHEW M. MILBURN.**

Northallerton, *Dec.* 12, 1844.

r. Topham having ceased to be secre-e Northallerton Agricultural Society, r of the 9th instant has been handed d I beg to inclose you a pamphlet, the of which will I think, fully satisfy iries.

ing your list of premiums, I would d you to offer one or more for the vated farm; nothing will tend more ensure the success of the society. We he want of it in this association.

be happy to furnish you with any fur-culars, if required.—I remain your's ly.

on Esq. **W. T. JEFFERSON**, Sec.

eral officers having been appointed, g separated.

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ng to accounts from Germany the ong horned cattle has not passed the Bohemia, and is subsiding daily.

AGRICULTURAL CHEMISTRY ASSOCIATION OF SCOTLAND.

THE half-yearly meeting of subscribers to this Association was held on the 13th ult., in the Highland Society's Museum, when there was a numerous attendance.

Sir **GEORGE MACPHERSON GRANT**, Bart., having been called to the chair, briefly stated the object of the meeting.

The Secretary, Mr. **COVENTRY**, then read the Report, from which it appears that Professor Johnston's lectures, fifty-three in number, have been given in almost every district of the country, from Ross-shire to Galloway where farmers were met together, and these generally on practical topics of their own selection, but not without a reference to the importance of general principles and the value of science. That at home, in the Laboratory, a great deal of work has been performed. Not fewer than 384 analyses have been made in the year, with separate reports and practical remarks or letters of advice, given with each. The subjects of these analyses have been—

Soils	134	Marles and Limestones	27
Guanos	122	Potatoes and other vegetable products	9
Ashes of Plants.	25	Miscellaneous	37
Oil Cakes	4		
Waters	26		

These analyses were made for private parties, members of the Association, but the public has likewise profited by them, inasmuch as the venders of manures have been deterred from selling adulterated articles. With one exception, indeed, we have not heard of a single case of adulterated guano in Scotland.

But the most interesting results of the anelytical inquiries remain to be mentioned. Without entering on the details, which could not be given here, the following statement must suffice:—

1. It will be remembered, that last year the analysis of two samples of turnips, raised respectively by means of dung and guano, presented remarkable differences in their chemical

constitution. In consequence of this, experiments upon their feeding properties have been made, under the direction of Lord Blantyre; and the result has been, that the cattle fed on the dung turnips increased much more rapidly than when fed on the other. So important a result, in reference to the value of guano, requires that the experiment should be repeated, which is about to be done in several parts of the country.

2. Oats have been found, on special investigation into those ingredients in them which yield muscle in animals, to possess those principles in larger proportion than any other variety of our grains usually employed for food, which will account for their very general use among our hardy peasantry.

3. The quantity of those ingredients in different varieties of turnips has never been investigated hitherto. It is now, however, under examination, and already it has been ascertained that in this respect they are equal to 1-30th or 1-40th part of the same weight as ordinary wheat or barley.

4. By analysing a variety of trap rocks, from different counties of Scotland, the proportion of lime they contain has been found to be very much greater than was generally supposed, amounting in some cases to as much as one-fifth of what is contained in ordinary limestones. This fact has important bearings on the application of lime in districts where those trap rocks abound, and the soil is formed from them. It also explains the source of the lime in marle-beds in hollows, with no calcareous rocks near them, as in that recently opened beside Holyrood.

5. In connection with this subject, it has been considered of consequence to ascertain the proportion of lime present in other kinds of rocks, and particularly in the clay rocks of Wigtonshire and the neighbouring counties, where improvement is making great progress. Among other results already obtained it has been found that those rocks, from which, in a great measure, the soils there are derived, contain only about *one per cent. of lime*; and hence the beneficial *effects which follow* the use of lime there, and even the necessity for its application.
fact is the more important as the cla
form nearly a sixth part of the entire s
Scotland, the trap rocks less than a ten

6. Barley sprouts and the dregs fro
leries contain so much of the valuabl
phates, that they admit of being most be
applied, and the importance of preservi
in all cases can be justified on the
principles.

7. The ingredients of the refuse lin
works have been found so to vary as t
great caution in the use of it. Farth
has been held out to the farmers, in
more especially, of its containing much
and, on this account, being a very
manure, is not to be depended on.

8. Practical farmers, in dairy district
remarked that certain varieties of s
favoured the stoning of their cheese, th
has been inquired into, and those variet
contain most of the deliquescent chlor
been found to be those which, in pra
swered best. This is rather remarkabl

9. It will be recollected that, at the
yearly meeting, the attention of the ch
particularly drawn to the prevailing
the potato, with the view, if possible,
ing some light upon its cause and cu
this view, soils and potatoes have been
and for the purpose of collecting info
was made the subject of discussion at
public breakfasts in Glasgow. Mat
thus gradually accumulating, out of
to be hoped that something practical
may at length be extracted.

10. While we select these from a
more easily understood practical resu
have been obtained in the Laboratory,
to mention that numerous investiga
higher kind have been constantly i
by which those scientific principles
explained and illustrated, upon whic
scientific agriculture is hereafter to b

After this enumeration the c
suggested that when points of di
interest occur, that they should
special attention of Professor J

d thus be enabled to report on
he next meeting of subscribers.
other topics the following have
and they may be taken as speci-
he kind of enquiries intended :—

n the impossibility, generally speak-
plying liquid manures to grass-lands
iod of their greatest abundance, or of
em with earth profitably—What other
, it may be asked, foreign to the farm,
e used for fixing the ammonia or other
matters, and which would admit of
rwards kept and used like guano?

t are the substances chiefly thrown off
t our manufactories, which might be
account, and in what way?

Professor Johnston anything to sug-
dition to what he has stated in his
ns on the advantage of using sulphuric
bones or bone-dust, the proper pro-
f them and the nature of their action,
r a mixture of sulphuric acid and
alt would suit with bones?

t is the effect of salve upon wool, and
lly promote the growth either of the
he health of the animal?

there no articles of home produce,
ght be made a substitute for oil-cake,
foreign productions, for the feeding
r cattle?

generally ascertained that a better
is got after turnips, when the shaws
n the surface till spring, than when
loughed in before winter—and, if so,
e explanation?

questions will be submitted now
sor Johnston, and a similar course
ed in future.

mmittee also suggest that local
s should be appointed all over the
and the report concludes with
mendation of several suggestions
importance.

port was adopted, and the thanks
eting were unanimously voted to
nittee, and to Professor Johnston,
hairman.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.—The anniversary general meeting was held on the 14th ult., in Edinburgh, which was attended by a large number of members. The several officers were appointed for the present year, amongst whom we notice his Grace the Duke of Montrose, president; the Earls of Eglinton and Selkirk, vice-presidents; the Marquis of Lorne, the Earl of Glasgow, Lord Belhaven, &c. extraordinary directors; Sir C. Gordon, Knt., Secretary, &c.

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DEATH OF CATTLE FROM DRY CORN-FODDER.—James Grant, Esq., (of Davenport, Iowa,) informs us that on turning his cattle into the corn-fields, after the corn was gathered last fall, several of them died from constipation. The stoppage took place in the manyplus (manifolds) or third stomach. The death of the animals was so sudden that cows which gave a good mess of milk at night, were dead the next morning; and oxen which worked as well as ever in the morning, died in the afternoon. After having lost several of the herd, among which was a valuable Durham bull, Mr. Grant saved the remainder by administering heavy doses of Epsom salts, &c.—*The Cultivator*, *(American paper.)*

CONTINUATION OF MILK IN COWS.—On the subject of keeping cows in milk from year to year, I have had some experience. It is not true that cows kept constantly in milk, will, after a lapse of years fail of their milk. This depends upon the nature and disposition of the cow for milk or fattening. I kept one in milk for five years constantly, and she increased in her milk every year, and it was almost impossible to dry her when I turned her to beef. I am now milking one for the third year, which neither gains nor fails in her milk, and I presume would not, should she be milked ten years. I am milking another for the first year, which I presume will continue to gain, from year to year. My cows have been kept from the bull—not spayed.—*Calvin Buttler*, *Plymouth.—Ibid.*

The most profitable farming is the highest and best farming. Land being capable of greater cultivation, and great quantities lying entirely uncultivated, the idea of abundancy of labour is erroneous.

It is stated that a guano island had been discovered in the neighbourhood of Saldanha Bay, near the Cape of Good Hope, which being within the limits of the colony had been claimed by the British Government. We understand that a ship of Messrs. Aikin and Sons, of Liverpool, brought a quantity of guano from the island a year ago, which proved to be of very poor quality.

Reviews, &c.

The Transactions of the Yorkshire Agricultural Society. No. 7. 1844.—*London :* James Ridgway.

The Volume of Transactions before us comprises two or three papers of a useful character, which are new to the generality of our readers: of such sort is the Discussion on Draining, which took place at the council dinner at Richmond, in August of last year; and a paper on Draining Clay Land, by Mr. Thompson, of Kirby Hall. But to us the following Report of the Judges of Farms entered for the prize of the Society, is most interesting, as shewing what is considered a prize farm in Yorkshire, and how it is managed.

To the Council.—Gentlmen,—Agreeably to your instructions, we commenced the inspection of the farms which were entered for the prize and sweepstakes, as proposed by the Society, on Monday, the 1st of July, and completed our labours on the following day. Towards the latter end of June we requested Mr. Milburn, the secretary, to give instructions to each competitor to prepare a written statement, and furnish us with it on our arrival, setting forth the number of acres of grass and tillage-land on his farm, the rotation of cropping, the different kinds of manure used, the quantity of seed sown per acre of all descriptions, the number of acres drained, the mode of consuming his turnips and converting his straw into manure, with any other particulars he might think proper to give. In consequence of these instructions, we had such information put into our hands as proved of essential service, by making us fully acquainted with the practice of each competitor before the inspection farm took place; thereby giving such to the business we had in hand, as in measure to enable us to complete in so time.

Four farms were submitted to us for i tion, which were taken in the followin of route:—

Occupiers.	Situated at	Owners.	Ex
Wm. Heddon,	Baldersby,	Dk. of Devons	
W. M. Beetham,	Gatenby,	Dchs. of Clevel	
Messrs. Outhwaite,	Bainesse,	S. Lane Fox	
Wm. Mauleverer,	East Harlsey,	Wm. Maulever	

On entering into the particulars of the farms brought under our notice, we co with those to which we have awarded the and will afterwards endeavour to give description of the other two, as we c their character and condition entitle the

The Messrs Outhwaite succeede father on the Bainessee farm, in the p Catterick, about twelve years ago. time it was full of old crooked fences, t being most of them small in proportio size of the farm. To these evils the pr medies were applied, by stubbing up fences, and planting new ones where re the fields have thus been very much e and appear to be well proportioned to a such magnitude. Two maps were s us; one of them representing the farm i improved state; the other, as at pres out; and certainly the contrast was ver and the improvement is so apparent as der it delightful to contemplate.

Since the year 1839, 65 acres of t have been drained with tiles and sto greater part of which has been laid t deep, and 21 feet apart; and the remai feet deep, and 12 feet apart. All thes empty themselves into the gravel at part of the farm. The water for the the fold-yards is brought from the hig the farm by a lead pipe; the distance derable, and the cost not less than £10 these improvements have been effect entire cost of the tenants.

The farm consists of 118 acres of g and 367 acres of arable, the greate which is of excellent quality, and well

to the four-course system which is pursued
upon it,—though the mode of cropping is very
different to that which is generally adopted.—
The usual quantity of turnips sown is near 100
cres. The ridges are all formed by the younger
Outhwaite, who is a first-rate workman; con-
equently they are done in a very superior man-
er. The Swedes are manured from the fold-
ard, at the rate of 18 tons per acre; the yellow
ullock and white turnips have from 10 to 16
ons per acre, with one or two cwt. of guano,
r two qrs. of bones, or half a ton of salt per
cre, where it is considered necessary to make
ch addition. A quantity of manure is pur-
hased at Catterick, and not less than £250 is
id out annually in one kind of manure or an-
ther. About half the turnips are drawn and
nsumed by the cattle in the fold yards, and
e remainder are eaten by sheep upon the land.
he principal part of the land that has grown
rnips is sown with wheat in the spring; and
henever it happens that any wheat is sown
ter seeds or clover-ley, the land is ploughed
ring the autumn, but not sown till the spring,
—the Messrs. Outhwaite having found by expe-
ence, that they can grow considerably more
heat by this method, and also grow it of su-
rior quality. Seeds, clover, or beans, follow
e wheat; and barley is generally sown after
e seeds and clover-ley. This is a peculiar
ode of cropping, but it has been found very
eneficial on this farm.

The quantity of seed sown per acre is 2½ bus.
f wheat, 3 bus. of barley, 4 bus. of oats; 14lbs.
f red clover, when intended to be mown; 10lbs.
f white clover, and 2lbs. of red, for pasture;
lbs. of Swedish turnip seed, and 2lbs. of yel-
w bullocks and white ones. In addition to
e turnips drawn into the fold-yards, bean meal
d linseed cake are both given very liberally
the cattle in winter, and the horses are soiled
the summer; so that the whole of the straw
made into excellent manure. The horses,
ttle, and sheep, that are kept on this farm,
e all exceedingly good and profitable. The
ces are regularly slashed, and the refuse car-
d into the fold-yards, to be converted into
nure. The land is kept remarkably clean; and the work done upon the farm, in every department, is altogether executed in a first-rate style. In short, every thing appears to be so admirably conducted, that it reflects the greatest credit on the Messrs. Outhwaite; and, in our judgment, they are fully entitled to the prize.

WILLIAM HEDDON has occupied the Howefield farm, in the township of Baldersby for 25 years. This farm has in it 60 acres of grass-land, and 254 acres of arable, all of which (with the exception of about 30 acres) is a fine turnip soil. The four-course system is adopted, and the cropping is generally pursued in the following order:—1st. turnips, 2nd. barley, or sometimes wheat in the spring; 3rd. seeds, clover, or beans; 4th. wheat, except when it happens that wheat has been sown after turnips, in that case barley or oats are generally substituted.

The manures used by Mr. Heddon are, fold-yard manure, bones, rape dust, lime, lime and salt mixed, ashes and night-soil from Ripon, and of late a little guano. The quantity of wheat sown per acre is, from 10 to 12 pecks; of barley 11 pecks, from 4 to 5 bushels of oats, and from 10 to 11 pecks of beans; from 12 to 14lbs. of clover for mowing, with half a peck of rye-grass. The seeds for pasture consist of 7lbs. white clover, mixed with 7lbs. of trefoil, rib-grass, cow-grass, and parsley, and also half a peck of Italian rye-grass.

The draining upon this farm has, of late years, been more to relieve old stone drains by cutting across them, and inserting new ones where it was found necessary, than any extensive new draining; but the strong land part of the farm, which had not been drained, has of late been laid with drains 30 inches deep, and at a distance of eight yards from each other.—The draining, as well as all other improvements on the farm, have been done at the sole cost of the tenant.

About two-thirds of the Swedes are drawn in the early part of the winter, and stored for the ewes and cattle in the spring, and the break-rows and hedge-sides of the others are drawn for the cattle in the fold-yards; the remainder of them are consumed by sheep upon the land where they are grown. The stall-fed beasts have bean meal and linseed cake given, in addition to the turnips. The milk cows are fed much in the same way; and the young cattle have a little cake given them in the early part of the winter, which is generally increased towards the spring. The horses are fed on chopped oat sheaves, with a little hay or clover mixed,—the quantity given being regulated by the degree of labour they are required to perform.

A great part of the wheat is thrashed in summer, and the straw converted into manure by soiling the horses in the fold yards. Green clover, tares, and grass, are used for this purpose, as most convenient. By these means, excellent manure is made in the yards all the year round. A large tank has been made for the liquid manure; and the spouts round the buildings are so arranged as either to throw the water completely away, or turn it into the yards, and through them into the tank, as occasion may require. A supply of this liquid is thus kept in readiness for the yards in a dry time, which is found to be of essential service, as the manure can always be put into a good sappy state before it need be carted from the yards. When the yards are full of manure, it is carted out and formed into heaps in the fields that are intended for turnips, and as soon as completed the heaps are closely covered with earth, either taken from the place or carted from a distance; then, at a convenient season, the sides are taken off and mixed with the soil at the top.

"Rape dust is generally used for wheat when it is sown upon bean stubble; and sometimes a little fold-yard manure is spread over the land in addition, after it has been well cleaned. It is then ploughed in and the land pressed. The rape dust is sown by hand after pressing, so that the seed and it go in together. Lime mixed with salt, in the proportion of two parts lime to one of salt, has also been used some years. All the clover and seed-land is limed at the rate of half a chaldron per acre, before the land is *ploughed for* wheat in the autumn, taking care *to apply it during* the night, and in damp wea*ther. This is done for* the destruction of slugs and snails, and answers remarkably well. About one-third of the land intended for turnips is annually limed, at the rate of three chaldrons per acre. Barley is drilled at six inches distance in the rows, and when wheat is drilled it is the same; but all the bean-stubbles, and lighter parts of the clover-leys, are pressed at the distance of nine inches. Beans are drilled in ridges at 22 inches apart; turnips, when in ridges, at 24 inches; and, when drilled upon the level, at 20 inches apart. Clover seeds are sown by hand,—one cast longitudinally, and the other transversely. By this practice Mr. Heddon considers that the rye-grass is distributed much more equally over the surface of the land. The potato ridges are 80 inches apart from each other.

"The farm is kept in excellent order,—the land being clean, and the crops good; so that we cannot entertain the least doubt of its being conducted in a very profitable manner, and we consider Mr. Heddon entitled to the returned stake.

"W. M. BEETHAM occupies 97 acres of grass-land, and 67 races of tillage, in the township of Gatenby, the greater part of which appears to be strong cold land, not under any regular system of cropping; for, by his own account, some of it has been turnips, barley, seeds, wheat and beans; while other parts have been fallow, wheat, and beans, or oats and beans mixed; so that it varies from the three to the five-course system. The method he adopts in the consumption of his turnips is, to draw them off and take about two-thirds into the fold-yard for the cattle; the rest is consumed on the grass-land by sheep. The whole of the farm has been drained. He states, that his object in managing a farm is to obtain from it the best living that he possibly can. 'The plan I adopt,' he says, 'is, as much as possible, to keep my land clean and in good condition; to put in the whole of the manure made upon the farm, and likewise all I can purchase at a reasonable rate. Also, to consume upon it all the produce of grain I possibly can, to the advantage both of the farm and myself.' How far Mr. Beetham has been able to accomplish his object, we ot able to ascertain; but certainly the crops his year are far from being heavy. This peraps may, in some measure, be accounted for y the peculiarity of the season, which has been ery unfavourable for heavy soils.

"Lady's Chapel Farm has been occupied, or nine years, by WILLIAM MAULEVERER, Esq., the owner. This farm contains 103*a*. 2*r*. 6*p*., and was thrown up at May-day, 1835, at rent of £50 per annum, when Mr. Mauleverer ook it into his own hands. He describes it as eing, at the time, a perfect wilderness; the pper part of the farm, containing about 50 cres, was uninclosed, and covered with whins nd thistles. This portion of the farm has all een stubbed and trenched, by which an immense quantity of stones were obtained for making roads and fence-walls round the fields, s well as for the drainage of the land. The ower part of the farm also abounded in large ist stones, which have all been taken up in a imilar manner, and employed in draining the and. Dead thorn fences divided the fields in his part of the farm, which have been removed, nd stone walls substituted. The old grass-land as all been broken up, and is now producing bundant crops of turnips, corn, and seeds. The eeds are allowed to lay three years before they re ploughed up. The method of cropping the high part of the farm is, by first taking turnips, next barley or oats; and then the land lays three years in seeds, when a crop of oats finishes the round. The low part of the farm is similarly treated, except that a second crop of oats is taken after the seeds. By this mode of management, the average quantity of seeds is about 38 acres, and of turnips about 12 acres, which are drawn off the land, and consumed by the cattle in the sheds and yards, or by the sheep in the fields, with hay in addition.

"The crops on this farm are looking remarkably well, considering the sterility of the soil, its situation and aspect; and, when contrasted with those growing on the lands adjoining, give ample proof of what has been done for it. Although we have no prize for Mr Mauleverer, yet we feel *confident that he will be handsomely rewarded* for his skill and outlay, by the extra production which his farm is sure to yield."

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First Annual Report of the National Flax and Agricultural Improvement Association.

THE two reasons against the extended cultivation of flax in England, which we have hitherto heard urged, were—1st, That you could not from that crop have both "*corn and straw*," for if you wished a fine sample of flax you must pull before the seed had ripened. 2nd. That flax was in any case an exhausting crop. We are glad, upon the authority of the report before us, to find that these were substantially errors, and that the seed may be saved without injury to the fibre, and that so far from flax being an exhausting crop it is in effect quite the reverse. The following are the remarks of the committee upon these subjects:—

"Those prejudices, so long entertained in favor of steeping flax with the bolls, your committee have the satisfaction of proving, by the numerous specimens produced this day, were founded upon ignorance of the proper management of the plant: an opinion which is confirmed by the following extract from the recent *Report of the Irish Flax Improvement Association*:—

"'A prejudice had formerly prevailed against saving the seed, from an idea that it would injure the quality of the fibre. But almost every where through the country, this season, a large portion has been saved, and the flax has not been at all deteriorated. From fully one-sixth of the present crop the seed has been saved, and either used for feeding, or sold for the oil mills; the total value of which cannot he estimated at less than from 60 to 80,000 pounds. It is believed that in a few years all the seed of the Irish flax crop will be saved, and an addition thus made to the resources of the country amounting to nearly half a million per annum.'"

"The produce of seed in the counties of Norfolk, Suffolk, and Essex, exceeds any accounts extant, as the 32 bushels per acre, grown by Mr. Negus, of Crimplesham, near Downham, Norfolk; with the crops of the Rev. T. C. Blair

Warren, of Horkesley Hall; Mr. Piearson, of Framlingham; Mr. Bear, of Paston, &c. varying from 20 to 29 bushels per acre, most clearly demonstrate. Your committee refer to the above facts as indisputable evidences that both seed and fibre can be profitably secured; and that the contrary opinion, at least under the improved system, is nothing more than idle prejudice.

"The exhausting effects of the crop, or rather the restorative; for, notwithstanding the outcry of its deteriorating effect upon land, the multitudinous instances to the contrary, prove that by a judicious introduction into the rotation of crops, flax improves the soil. And, that tales from ancient writers upon this point tend only to deceive, as the following circumstance clearly corroborates. Several members of the North Walsham Farmer's Club entered into a sweepstakes to produce, on the 19th of December, the greatest weight of turnips from a given quantity of land, without regard to soil or rotation. Mr. Playford, of Northrepps, selected a field that had produced an abundant crop of flax and linseed the previous year, and exceeded the highest weight of his competitors by 4 ton 15 cwt. Again, Mr. Atkinson, of Walcot, sold an acre of flax and seed for £13. 7s. 6d. last year, and in the present had 64 bushels of barley from the same acre, without the application of manure. But the soundness of the above remarks will be seen by a comparison between flax and corn; the straw only of the latter being returned to the soil; while the seed of the former, being consumed by cattle, is diffused over the whole farm in the shape of manure. Nor ought the chaff from the bolls and broken stalks from the fibre to be lost sight of, as they may be fairly set against the straw and chaff of other crops."

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Lectures to Farmers on Agricultural Chemistry. By Alexander Petzholdt. London, Taylor and Walton.

THESE lectures are written in an easy, familiar style, and are well suited to the mass of those for whom they are intended. The work is divided into three sections, of which the last is entirely practical. The two first sections are employed in the consideration of the three common elements of productive (vegetable) nature, viz., air, earth, and water, and the origin and constituents of plants. Fully agreeing with those who consider the phosphates as essentially the most important fertilizing agents, we have marked for extract that portion of our author's fifth lecture which, being devoted to "the soil," contains his theory of the origin of phosphates. In concluding this lecture the writer observes:—

"Finally, with respect to the presence of the phosphates in the soil, the oxygen of the atmosphere has nothing to do with their formation, the phosphates already existing in rocks and minerals do not admit of a higher degree of oxidation. The process of disintegration merely liberates these salts mechanically. All the phosphates, moreover, which occur as constituents of minerals, are insoluble in water, and, therefore, are not acted upon by carbonic acid nor by oxygen.

"But, gentlemen, I am well aware of the objections which have been, and are still, made to this view of the origin of the phosphates found in arable soil; I will now state some of these objections, and, I trust, convince you of their fallacy.

"In the first place it is said, that phosphates occur too rarely as constituents of minerals, to account for their presence in the soil; secondly, that these phosphates—or at least the phosphoric acid—is derived from animal manures, and especially from bones; and lastly, since the phosphate of lime which is found in the eggs of fowls seems to be formed from substances which apparently contain no phosphoric acid, it has been supposed to be generated out of nothing, or to have been created by the transformation of some other element; and you may, unless you attend to my cautions, be led to suppose that by some such mysterious process it may be formed in the organism of plants, or in certain soils. Well, we may admit that the phosphates are of rare occurrence as minerals. Quartz, ica, felspar, &c., are incalculably more abun-ant than apatite, wagnerite, and other native osphates. But if you bear in mind that the nount of phosphates in arable soil is very all, you will see there is no necessity that ey should occur in any large proportion in cks, in order to furnish the supply. We have ly to be assured that phosphates do really cur as constituents of rocky masses, without oubling ourselves about the amount. A great any localities are known where phosphates are esent in granite, gneiss, mica slate, clay slate, ., and in these cases, it is important to re-ark, the phosphates were discovered only by cident. Mineralogists in examining the phy-al characters of these rocky masses, having t with portions more or less crystalline, which idently differed from the usual constituents the rocks, were led to make a more particular that is to say—a *chemical* examination of se portions, and this, quite unexpectedly, owed them to consist of phosphates. Direct estigations, so far as I know, have never n made with the view to determine the ques-n whether the phosphates are always found these rocks, nor is it probable that experi-nts will be undertaken upon a sufficiently ge scale for this purpose, for some time to me, since the detection of minute proportions phosphates is frequently a difficult task, even en we are certain of their presence. The osphoric acid very readily escapes detection. is unnecessary for me to explain the causes these difficulties in analysis, it is sufficient r you to know that they exist. Phosphates, wever, have been detected in all primitive ountains whenever they have occured in large antities or in a crystalline form, but it is very sy to overlook them when in smaller propor-ons and in a non-crystallised state. The rarity f their occurrence in a crystalline form is no oof of their rarity in an amorphous state. here seems, therefore, to be no good ground to ubt that the phosphates found in the soil have een originally constituents of mountain masses, d that their presence in the soil is owing to e degradation of those masses.

"With *respect to the opinion that the* phosphates of the soil owe their origin to manure and especially to bones, I may first inquire whence do you suppose the phosphoric acid of manure, or rather of animal bodies, to come? In answer to this, some may say that it is derived from the aliments of which animals partake; others may suppose it is actually created in the animal body. If the phosphoric acid of the animal body be derived from the aliments, how does it become a constituent of those aliments? You see we must go back to that contained in plants, or rather in the soil, and this is merely proceeding in a circle. What really happens is this: carnivorous animals (the lion for example) derive phosphoric acid from the bones and flesh of other animals of the herbivorous class which they devour, these from plants upon which they feed, and plants draw it from the soil; and the presence of phosphoric acid in the soil is owing to the disintegration of rocks. Thus, you perceive, that phosphoric acid, as well as sulphuric acid—essential constituents of organised beings—are derived originally from the mineral kingdom. The fact that in bone manure you bring phosphoric acid into your fields, does not at all invalidate this conclusion, since all the phosphoric acid of bones once belonged to vegetables, and was by them derived from the soil, and came into the soil by its separation from mineral masses. If, however, it were granted that the phosphoric acid of the animal kingdom could have had some other origin, this would not explain the circumstance that plants which have never received manure, *ex gr.* those growing wild upon soil never cultivated, contain phosphoric acid: this must be referred ultimately to the disintegration ot rocks."

Upon this very interesting and important subject further experiment appears to us necessary. It is an admitted fact that most soils contain naturally but a small amount of the phosphates; whilst herbivorous animals, deriving their subsistence solely from the productions of those soils, and the air and water, contain large proportions of phosphoric substances; and so indeed do fish.

Observations on the Scottish Agricultural Lease. By James Easton, of Glasgow, for several years sub-factor on the estates of the late Earl of Rothes. Edward Khull, Glasgow.

We are glad to be able to call the attention of our readers to that *ne plus ultra* of human ingenuity, a Scotch Farming Lease. Aware that the leasehold system has prevailed for many years in Scotland, and that it is equally in favour with the landlord as with the tenant, we confess a degree of curiosity possessed us to know somewhat of these famous documents, which are said, and truly so, we think, to be the main spring of the agricultural enterprise and success in that kingdom. We were anxious to reconcile the manifest disinclination on the part of the landowners of England to grant leases with the readiness, almost amounting to anxiety, which their brethren across the border exhibit, to tie their tenants to their farms for the period of 19 years. This we confess we have not been able to do. Why the owner of a farm, evidently in want of improvement, as eight-tenths of the farms in England are, should not see his direct interest in offering inducements to a tenant to effect those improvements, and so raise the value of his farm, we cannot discover.

Were the farms of England incapable of any improvement, or were the landowners, as a class, wealthy enough to effect all improvements, a tenancy-at-will system would be well enough, provided it protected the land against the tenant, on the one hand, and the tenant against the landlord, on the other. But as it is, why leases are good things for the landlords in Scotland, and bad ones in England, we confess, as we before observed, we cannot discover. But let us not lose sight of Mr. Easton, from whom we learn that the farmers' lease of Scotland differs little in many respects from well-drawn leases in England. Mr. Easton it is true, does not say so, for possibly he may not be aware that such is the fact: to prove it, however, we intend in our next number to set out the substance of the Scotch lease, as given by Mr. E.; from which our readers will at once see where the difference lies.

Mr. Easton's pamphlet contains many very pertinent observations upon the leasehold system, and to these we would call the attention of our readers, for they abound with practical good sense.

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The Veterinarian, January. London, Longman and Co.

We have the following "*On Prolaps Uteri—Inversion of the Uterus, or "Throwing the Reid down,*" by Mr. W. A. Cartwright Whitchurch, Salop :—

"Inversion of the uterus in the cow a sheep is a very common occurrence; but in t mare, and other animals, it more frequent from neglect or maltreatment, terminates f tally: when, however, a person who underst his profession is called in at an early peri and before much injury has been effected, may generally be returned very readily, and t animal none the worse for the accident.

"*Causes.*—The causes which give rise to attack are various, some of which I will n relate.

"It appears that any thing causing viol irritation in the uterus, or even in the vagi may be the cause of inversion, such as str labour pains during a false presentation—r ture of the uterus or vagina—violent cough —hoove, or acute indigestion—uteritis [Infl mation of the womb]—spasm of the uter large hydatids or vesicles in the ovarium a which press on the uterus—retention of placenta [after birth or cleansing] or consid able force in extracting it—over repletion of system—relaxation of the ligaments of the rus, or of the os uteri; and, not unfrequ it comes on a few hours after calving, with any assignable cause other than from t general irritation of the system consequent parturition. I have known it to occur aft premature labour from over-exertion in trav ling. It is rare after ordinary abortion.

"Cases now and then happen, but they a

ery rare, where one of the horns of the uterus ecomes inverted on its axis, and have been trangulated with the broad ligament. Once I aw a case where the uterus was partially in- erted, and I have every reason to believe was angulated and pressed on by the contraction f the os uteri.

"*Treatment.*—Before we begin to return it to s natural situation we must have plenty of sistance at hand, and, if possible, get her to nd up if she is down. One of the assistants ould lay hold of the cow by the horn and e, another should press down her back, or d her to keep her, if possible, quiet. If it is mare put the twitch, or side line, or hobbles . We should then lift the uterus on a clean th, which should be supported by a person each side; then separate the placenta from cotyledons, [part of the inside of womb] doing which we should be careful of not ing any of them off, though I have seen some them accidently removed without any ill ct. If it is dirty, wash and clean it with m milk and water, or any mucilaginous de- tion of herbs. We should then place our ched fist against the fundus, or extreme end the uterus and force it again into its proper e. In doing so, we should, with our other d and other assistants, gradually and steadily e the sides of the uterus in, and which will, great measure, take off a deal of the pressure ed by the fist, and which might otherwise ure the uterus.

"It will generally be found that when about f of it is returned it will begin to slip in very ly. We must be careful to pass our arm ciently far up in the body until the whole e uterus has become re-inverted. Some ons are in the habit of placing a clean kin over the fist and arm, which, perhaps, y assist in drawing in the sides of the uterus, becoming in a measure attached to it. It y also prevent inoculation of the arm, which ave in several instances experienced to a nful degree.

"Mr. Climenson, in an Essay recently read fore the Veterinary Medical Association, has id, 'it has been stated by authors that you may take hold of the fundus, and thus put it back. I never could do it in this way, and I very much question if they could. When you consider the immense mass which the uterus forms, I think there is an absurdity in thus talking about it. We know how small the vulvular opening is, and that the uterus is always very much increased in size after parturition.' Now, for my own part, I think that it is 'absurd' for Mr. Climenson to make such an assertion, for my own practice, and that of others, contradict it. Indeed, I very seldom adopt any other plan than the fist to the fundus.

"I have put it up in the way he recommends, viz. by grasping its neck and gradually passing the hand onwards until we come to the fundus, and then, by applying the other hand doubled, we pass it back readily. The plan that I have recommended appears to me the most rational and feasible to adopt for its reduction; for I cannot conceive that the uterus by this method can narrow the vulval opening so as to be of any serious importance. If there should be any difficulty in returning it in consequence of the violent straining, I would advise that the animal should have a tolerably free venesection, and a dose of anodyne medicine administered, and repeated if necessary. We may also apply a strong girth or body roller around the chest, so as to prevent is distention by allowing of a full inspiration.

"Should there be hoove present to a considerable extent, which sometimes is the cause of inversion, the rumen should be punctured, and instances are on record where it has been necessary to lay open the abdomen and remove the contents of the rumen. The animal has done well afterwards. Sometimes the uterus has been down for a long time, and has become cold and livid, or swollen to a great extent. When such is the case, it may be necessary to foment it and scarify it previous to attempting its return, or to apply some astringent to it, such as vinegar and water.

"It may be useful sometimes to pass the catheter and empty the rectum. After it is returned sutures should be passed through the lips of the vulva, [shape] or under the skin on the outside of it. In the ewe it is a common practice to pass a small ring through the external parts, and I think it would not be amiss to use it in other animals. The cow, if down, should be raised up under her hind quarters with a quantity of dry horse-dung or straw, so as to favour the retention of the uterus. She should have some anodyne and aperient medicine, and be kept very abstemiously on bran mash or gruel until the pains have subsided. Bags of scalding bran or hot salt should be put to the loins, and fomentations to the vulva, and, if the pains should continue for some days, we may try a blister to the lumbar vertebræ, [the loins]. We should be careful to observe whether the animal urinates at all, as sometimes inflammation of the meatus urinarius takes place causing extreme pain from the retention of the urine. In such cases, we should pass the catheter. When we suspect that the retention of the placenta causes great irritation, and we fear inversion of the uterus, our best plan will be to remove it at once, and afterwards use the soothing system, by occasionally administering small doses of sedative medicine by the mouth, and injections of the same up the uterus. We may also, if the discharge from the uterus is offensive, use weak injections of the solutions of the chloride of lime or soda.

"The French have recourse to a pessary, [instrument] with a broad shield at its base, which they place high up in the vagina, and fasten it to the lips of the external opening or the skin by means of the ring or suture; but this, I fancy, is seldom had recourse to in our country. Instances have been known where the uterus has been ruptured by using the pessary in returning it. When we are unable to return it into its proper situation in consequence of its being enormously swollen, we have no other alternative, but must proceed to amputation either with a knife or the ligature."

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Quarterly Journal of Agriculture, and Transactions of the Highland and Agricultural Society of Scotland, January, 1845. Blackwood and Sons, Edinburgh and London.

THE present number of the "Journal" is *rich in* good things. Mr. William Walton, "*On Guano,*" gives a rather diffuse account of the early agriculture of the Peruvians, and the introduction of this now well-known fertilizer into this country.

Mr. Thos. Rowlandson in his paper "*On Lime and its compounds, and their influenc on Agriculture,*" takes occasion to diffe with Mr. Skilling, the manager of th model farm at Glasnevin, near Dublin, a to the value of the brown-coloured flu which exudes from dung heaps, the writ maintaining that it is of no value "whe applied to the land in a separate state;" whilst Mr. Skilling declares that—

> "These facts ought to startle the farmer a make him reflect, that the black fœtid flu which oozes from his dung heap, and is wash away to the gripe, or suffered to evaporate i the air, is the true food and substance of plan already prepared (cooked as it were) for th use; and this is the reason why the same su stance acts so instantaneously and effectuall on almost every plant to which it is applied i its pure state. These considerations shou induce him to hoard this liquid like gold in th chest. This is the essence of his manure, th spirit of his dung-heap; when this is gone, wh remains is comparatively inert and useless."

With reference to a suggestion of th writer, that mild lime should be added t dung heaps whilst they are being form by the gradual accumulations from th stables, &c., we would remark that ve mild indeed must the lime be which coul with common prudence, be applied to fre dung; for we have found by experime that lime, after being mixed in a caus state with soil for eight months, has h sufficient strength left to decompose fre stable dung in a fortnight: we should hes tate, therefore, to apply lime to a du heap unless in a very finely divided sta and exposed to the action of the atm phere for a length of time.

The Rev. James Duncan, M.W.S., h an interesting paper on "*The Tussac Gr of the Falkland Islands,*" from which w make the following extract:—

> "It is called the Tussac grass from its habit of growth, the roots becoming densely matted

nd the lower parts of the stalks form-
e tuft of *tussack*. These basal or
ortions, formed by the close approxi-
the stems or culms, often rise to a
le height—from four to six feet; the
ng leaves then diverge from them,
down all around, often in a very
rve, like the falling waters of a *jet*
ese masses are insulated, generally a
art, and the leaves, meeting above,
d of arched roof, beneath which the
generally quite bare of vegetation.
ground thus forms a complete laby-
a man may walk along its green
mpletely concealed from view. Nay,
ay be formed of it in a very short
inclined stems, when fastened to-
y be made to serve as a roof, while
aves about the root make a tolerably
Bougainville states that he often in
btained shelter for himself during his
s. This, however, refers to the plant
st luxuriant state of growth: it is
low as scarcely to afford adequate
the flocks of penguins which resort to
purpose of building their nests and
ir young.

early naturalists who examined this
was thought to be a fescue, and we
y have it referred to under the names
a flabellata and *Festuca cæspitosa.*
tices it under the name of *Dactylis*
and that appellation is now retained,
l examination of its character leaves
that it belongs to the genus *Dactylis.*
us a generic relationship to a well-
ss in this country, the *Dactylis glo-*
cock's-foot—a strong, coarse grass,
tufts of which may be seen growing
e of every hedgerow and field. The
erennial; the root consists of a dense
tortuous fibres. The stems, which
m the little hillock formed by the
numerous, erect, branched or divided
e base, from three to four feet long,
nd compressed. The leaves are nu-
e lower ones very long, not unfre-
om five to seven feet, about an inch
he base, and gradually tapering to a
m above the middle they are curved
, or even pendent; the stem-leaves
radually shorter upwards, and are of
ucous or sea-green colour; the other
pale yellow. The panicle is a span
wards, very dense, forming a some-
rupted spike, nearly two inches broad,
d and obtuse; the branches short and
rachis angled. "Spikelet composed
four florets, of a pale yellow-green
he calycine glumes are lanceolate, acuminate, longer than the spike of flowers, slightly keeled, shortly ciliated on the back, three and a-half lines long, the margins a little involute, and, as well as the apex, membranous and transparent, the superior one a little longer than the other, three-nerved, the nerves ciliated. The lower glume or palea of the corolla is ovate, concave, compressed, and sharply keeled; bluntly trifid at the apex, fine-nerved. Stamens three. Anthers pale yellow. Ovary nearly ovate and glabrous. Fruit elongate-ovate, or almost cylindrical, slightly trigonous, of a pale yellow colour, and smooth."

"It will at once appear, from the length and breadth of the leaves, the dimensions of the culms, and the profusion in which both these are produced, what an immense quantity of herbage this plant is calculated to afford. Both the leaves and stems abound in saccharine matter, and form a most nutritious food. The inner portion of the stem, for a little way above the root, is soft, crisp, well-flavoured, somewhat resembling the kernel of a nut, and is often eaten by the inhabitants of the Falkland islands. The young shoots also are boiled and eaten like asparagus. This tends to shew the wholesome nature of the whole plant as an esculent; but it is as affording pasturage for cattle that the tussac is to be chiefly valued. The Falkland islands have long been known to be inhabited by many wild cattle and troops of horses, and these are principally supported by this grass, which they prefer to every other kind of food. Not only these, but every herbivorous animal in these regions not only devours the tussac with avidity, but is affirmed to fatten on it in a short time. This predilection is shewn for it both in a green state and when dried, insomuch that cows and horses often eat the thatch from the roofs of the houses when it happens, as it often does, to be composed of tussac grass. "During several long rides," says Lieut. R. C. Moody, "into the country, I have always found the tussac flourishing most vigorously in spots exposed to the sea, and on soil unfit for any other plant, viz., the rankest peat-bog, black or red. It is singular to observe the beaten foot-paths of the wild cattle and horses, marked like a foot-track across fields in England; extending for miles over barren moor-land, and always terminating in some point or peninsula covered with this favourite fodder; amid which one is almost certain to meet with solitary old bulls, or, perhaps, a herd of cattle—very likely a troop of wild horses, just trotting off as they scent the coming stranger from afar. I have not tried how it would be relished if made into hay, but cattle will eat the dry thatch off the roof of a house in winter; their preference to tussac grass being so great that they scent it a considerable distance, and use every effort to get at it. Some bundles, which had been stacked in the yard at the back of Government House, were quickly detected, and the cattle from the village made, every night, repeated attempts to reach them, which occasioned great trouble to the sentry upon duty." It is the opinion of those who have visited the Falkland islands that, if proper attention were paid to the propagation of the tussac grass, and if it were prevented from being entirely eaten down in those places where it now abounds, it would, of itself, without aid from the other indigenous vegetation, not only yield abundant pasturage to all the cattle now existing there, but would support as many as there is ever likely to be a demand for in that quarter of the globe.

"It is generally found growing near the shore, and flourishes best where the saline spray dashes over it. Indeed exposure to the sea breeze, and the peculiar influences which emanate from the ocean, are conditions which seem essential to its prosperity. It is then only that it reaches its most stately proportions, and assumes that exuberant and imposing form, which have led one author to speak of it as the "splendid tussac grass, the gold and glory of the Falklands." As it recedes from the ocean, it becomes dwarfed and sickly, as if out of its kindred and appropriate element, in this respect resembling our own native *Arundo arenaria*, *Triticum junceum*, and certain other gramineous plants.

"It seems to be the almost unanimous opinion of those who have examined this plant in its native localities, that it would succeed in certain situations in our own country. The climate, soil, and most other conditions, are not so different from those it meets with in its native regions as to be likely to form insuperable obstacles."

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A Prize Essay on Guano: being a report on Experiments with Guano to which the prize of the Yorkshire Agricultural Society was awarded. By M. M. Milburn, Secretary to the Society. London, Simpkin and Marshall.

Peruvian and Bolivian Guano; its nature, properties and results, collected by Messrs. Anthony Gibbs and Sons, London, and Messrs. W. J. Myers and Co., Liverpool. London, James Ridgway.

These two pamphlets have in view the same object, viz., to diffuse information amongst the agricultural classes, as to the value of guano as a manure. The e
ments reported by Mr. Milburn, i
former of them, appear corroborati
the results given by the highly respe
mercantile firms in the latter. And
glad to find that this is so, for do
many would be unconvinced by the
ments given by Messrs. Gibbs and
because, as the sellers of the article
might, by those to whom their high
racter and standing is unknown, b
pected of publishing results which
been coaxed into what their direct i
would dictate. Mr. Milburn's state
however, is beyond all such suspicion
most cautious incredulous farmer m
convinced by the results there coll
albeit some of them are not so satisf
as may have been expected. But n
mer, we contend, ought to be satisfie
less than *three* experimental trials
any new subject. There are so
causes for different results from appa
the same means, that nothing short of
failures consecutively, or an aver
failures in a given number of trials,
to satisfy him that his confidence wo
misplaced.

Horticulture, &c.

Araucaria imbricata.—Sow the
of this now, in pans about three parts
with light sandy loam; place the
with the small ends downwards, and
them about half their depth into the
covering them afterwards with moss.
should have a moist heat of from
70°, until they begin to vegetate;
wards take off the moss, and cover
fresh soil, removing the pans to a
situation. Give no water for the fir
days after sowing, and but sparingly
wards.

Buddlea Lindleyana.—As this p
only of very late introduction, nothing
tain can be said of its habits; but it
evidently bear any degree of pruning,
may therefore be kept within bounds
out difficulty. Possibly, at its full s
may be 5 or 6 feet high. It is pro
that Buddlea will flower in the aut
but this, too, is uncertain. Wheth

l harmonise well with Wistaria,
udge when you are told that it is
urple Sweet Pea; but the flowers
ike those of a Verbena in form.
;reen, and seems very indifferent
. Mr. Fortune found it in Chusan.

ATER IN SHEEP.—The following
for this disease we extract from
porary:—Linseed Oil, 1 pint;
Nitrous Ether, 2 oz.; powdered
drs: Gentian and Ginger pow-
each 1 oz. The above will be
for about 8 teggs, and should be
mixed and shaken up before being
dose should be administered on
symptom of illness or dullness.
pain is exhibited, bleed from the
revention is of more importance
cure. Give fewer Turnips, more
od hay, a little corn, and rock salt
the layer has been wet change it.
en stated that a table-spoonful of
tar, given once a fortnight, is a
entive.

The Markets.

.—A degree of firmness in the principal
ads us to conclude that the price of
ll be steady. We cannot at present
rd to anything more, as the return of
flour in bond for the week ending the
ews that we have under lock more than
s the amount of grain we had at the
ling period of last year, and of flour
n eleven times as much. Still as there
nt inducement to extend the importation
ports whence we can receive it; and
orts whence there might be an induce-
hip both flour and grain are closed
nd we cannot receive it, we count upon
e rather than a retrograde movement
The general runs of home grown grain
f condition from the damp weather:
nples, however, find a ready sale, at
ices, varying according to quality from
to 56s. white, per imperial quarter.
Y *is a shade lower, the deliveries from*
ers having been very large. Malting
re quoted at 36s. imperial.
re in fair request, and though a decline
itted to early in the past month, prices
ain not to be soon again depressed.
are dull of sale, at from 32s. to 35s.
Large quantities are said to be on the
r from Egypt.
is a turn lower since Christmas, the best
s realising 6d. per lb. and sink. Good
qualities range at 4½d. to 5d.

MUTTON *of prime quality is scarce, and is well worth 6½d. Strong coarse woolled sheep will hardly reach 5d.*

VEAL *is in demand at 6½d. to 7d.*

PIGS.—*Bacon, 5½d., small ditto 6d. to 6½.*

The WOOL *markets are firm and steady.*

The prices of Hay and Straw differ much all over the kingdom. Prime upland hay or clover is anywhere worth £6 per ton, whilst as much as £7 is paid in some districts. Wheat Straw, £2. Oat ditto, £3, which, should the present weather continue without a thaw, will rapidly increase, and it is difficult to say to what figures provender will rise.

LONDON, Jan. 27.		Per	Qr.
WHEAT, Essex and Kent, new, red		46	48
White	46	50	54
White, old		52	56
RYE, old		30	34
New		36	—
BARLEY, Grinding		27	30
Malting		33	35
Chevalier		36	—
Irish		26	28
Bere		26	—
MALT, Suffolk and Norfolk		58	63
Brown		56	60
Kingston and Ware		60	—
Chevalier		65	—
OATS, Yorksh. & Lincolnsh., feed		22	23
Potatoe		23	24
Youghall and Cork black		20	22
Cork, white		21	23
Dublin		21	22
Black		21	23
Scotch feed		22	28
Potatoe		23	25
Limerick		23	24
BEANS, Tick, new		34	36
Old, small		38	40
PEAS, Grey		34	36
Maple		35	36
White		33	35
Boilers		36	38

SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..45
Mustard, White...... 6 7
Brown .... 8 11 per bush.
FLOUR, Town-made 42 —
Suffolk.... 33 35 per sk. of 280 lbs.
Stockton and Norfolk 33 35

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		32	36
Hamburgh		30	—
Rostock		30	—
BARLEY		20	24
OATS, Brew		17	18
Feed		15	17
BEANS	—	24	29

Peas	28	32
Flour, American, per barrel	19	—
Baltic	18	—

LONDON AVERAGES.

		£.	s.	d.
Wheat	6833 qrs.	2	8	4
Barley	5472	1	15	6
Oats	28639	1	1	10
Rye	12	1	11	6
Beans	2101	1	14	0
Peas	1122	1	16	11

SEED MARKET.

	s.		s.
Canary, per qr.	51	to	53
Carraway, per cwt.	44	to	46
Clover, red, English	—	to	—
„ „ Foreign	—	to	—
„ white, English	—	to	—
„ „ Foreign	—	to	—
Coriander	15	to	18
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000	£13	to	£13 5s.
„ „ Foreign, p. ton	£8 15s.	to	£9 5
Mustard, white, per bushel	14	to	18
„ superfine „	—	to	—
„ brown „	12	to	17
Rapeseed, English, per last	£23	to	25
Tares, English, winter p. bushel	5s 9d	to	6 3
Foreign „ „ „	—	to	—

LIVERPOOL, Jan. 28.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℘ 70lbs.	7	3	7	8
Ditto, red	7	0	7	3
Irish white, new	6	6	7	0
Egyptian	5	9	6	0
Oats, Eng. mealing, ℘ 45lbs.	3	3	3	6
Irish	2	11	3	0
Welsh	2	10	3	0
Barley, Eng. malting ℘ imp. qr.	35	0	37	0
Grinding	0	0	0	0
Irish and Scotch	4	3	4	8
Rye, per imp. qr.	32	0	34	0
Beans, English, per imp. qr.	40	0	44	0
Irish and Scotch	38	0	40	0
Foreign	40	0	43	0
Egyptian, per 480lbs.	32	6	34	0
Peas, English, per imp. qr.	40	0	42	0
Foreign	38	0	40	0
Malt, per imp. qr., fine	60	0	65	0
Flour, English, per 280lbs.	40	0	41	0
Irish	38	0	40	0
Foreign, duty-paid, per 190lbs., U.S.	27	0	28	0
Canadian	26	0	27	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	25	6	26	0
Irish	25	0	25	3
Indian Corn, per 480lbs.	28	0	31	0

PRICE of AGRICULTURAL PRO

Liverpool, Jan. 27.

Hay, best	1s	1d	
Clover ditto	1	0½	
Green ditto	0	2	
Vetches	0	0	
Straw.			
Wheat	0	6	
Oat	0	6¼	
Barley	0	4	

Potatoes.
Short tops
Red apple
Cups
Cattle
Turnips pr ton
Carrots
Mangle

Cattle Markets.

LONDON, SMITHFIELD.

Jan. 27, 1845.	℘ st. o		
	s.	d.	
Inferior coarse beasts	2	8	t
Second quality do.	3	0	t
Prime large Oxen	3	6	t
Prime Scots, &c.	3	10	t
Coarse and inferior Sheep	2	10	t
Second quality do.	3	2	t
Prime coarse woolled do	3	8	t
Prime Southdown do	4	2	t
Large coarse calves	3	8	t
Prime small do	4	8	t
Large Hogs	3	6	t
Neat small Porkers	4	2	t

LIVERPOOL, Jan. 27.

	s.	d.
Beef, per ℔.	0	5½
Mutton	0	6¼
Lamb	0	0

MANURES.

Subjoined are the prices of several s of manure:—

Bone dust, 17s. per qr.

Half-inch Bone, 15s. per qr.

Artificial Guano, £9. per ton. 15s. per c

Guano, 10s. to 12s. per cwt., accordi quantity.

Rape Dust, £6. to £6. 6s. per ton

Rape Cake, £6. per ton

Gypsum, at the water side, 35s. 0d. per landed and housed, 38s. to 42s. per

Nitrate of Soda, 16s. 0d. (duty pd.) per

Nitrate Potash (saltpetre) 26s. per cwt.

Preparation for Turnip Fly 10s. 6d. per p sufficient for three acres.

Muriate of Ammonia, 24s. per cwt.

Muriate of Lime, 6s. per cwt.

Compost, £3. 12s. 6d. per hhd. sufficie three acres.

Alkalies, 28s. and 42s. per cwt.

Sulphuric Acid, 1½d. per ℔.

Sulphur for Destroying Worm on Turnip per cwt.

Sulphate Soda, 6s per cwt.

THE BRITISH CULTIVATOR

AND AGRICULTURAL REVIEW.

MARCH—1845.

LANCASHIRE FARMING.

The remarks of Colonel Rawstorne, which we have before noticed, continue to excite a lively interest in this county. The Clod-croppers, Clod-breakers, and Clod-crushers are all astir. It appears they have amongst them some Scotch farmers, recently imported, who, according to newspaper controversy, are not by any means infallible, and whose recent failures have to be accounted for. The gallant Colonel himself, too, comes in for a share of clod-crushing criticism, and certain lands of his are pointed out, of which an inspection would afford an immediate answer to his important enquiry, "why rents are so much lower in Lancashire than in Scotland." Fields over-run with rushes and the coarse grass called "Bent," which by the way is peculiar to certain soils and situations, the Col. must be aware cannot command much rent, and require the performance of particular well known operations before in our opinion they will be worth any rent at all.

There is no reason whatever why Lancashire rents should not be as high, or even higher than in any other part of the three kingdoms, but this must be brought about by improvements which require both skill and capital. The former may be surely ound amongst the tenants, at least *it ought to be*, and the latter amongst the landlords, who cannot make any investment so safe as that of an outlay upon the security of their own estates. If the county of Lancaster is so unfortunately situated as to have no tenants with skill, and no landlords with capital, we can but reiterate our advice to the latter, viz., to offer their farms upon such conditions, and for such terms for years as shall induce farmers from other counties, of whom there are plenty, with both skill and capital to undertake the task of proving to the world that Lancashire need not be one whit behind in productiveness either to the tenant or the landlord.

STALL-FEEDING.

The very rapid advances which the science of agriculture is making at the present time cannot fail of being remarked, even by the most casual and uninterested observer. It resembles a tree, which, after having been allowed for years to bear what fruit it spontaneously could, unheeded and almost despised, has by pruning and other stimulants acquired, as it were, new life, and begun to shoot with fresh vigour. It is not my present intention to revert to the causes by which its dormant energies were first aroused, or to notice those incentives by which its onward progress is yearly accelerated, as these would be subjects irrelevant

to the object I have now in hand. In an age when agriculture has raised its head from its former lowly station, and is beginning to assert its right to that high rank among the occupations and pursuits of men, which from its own dignity and intrinsic value it so justly merits—when science is lending her aid, and new theories are each day springing up—when great chartered societies, with many a local tributary, are established for its benefit and furtherance, and journals and newspapers, devoted to the cause, are circulated quarterly, monthly and weekly, through the land—when farmers are beginning duly to appreciate the value of a *sound and good general education*, and schools and colleges are being instituted for the purpose of affording to their children those blessings of which they feel themselves the loss; and lastly and chiefly —when we see what still increasing numbers of the well-educated youth of our country, the sons of gentry, clergy, and merchants, are flocking around the standard of agriculture, having discovered that the character of a *gentleman* may now harmonize well with the once-despised title of *Farmer*. Under such circumstances, does it not behove all those who come forward, either as practical or theoretical teachers, in agriculture, well to beware, lest by wilful or ignorant mis-statements, either in their speeches or writings, they should induce the young and inexperienced beginner to adopt systems, whether in husbandry or the management of his stock, the fallacy of which he will soon discover to his cost and injury. I am induced to offer these remarks from having read an article in your number of the *Farmer's Herald* for this month, signed "*Hark! Forward!*" in which the author endeavours to uphold the system of "Stall-Feeding Milch Cows." Now I am sure that every *really good experienced* dairy farmer will agree in denouncing this practice as most injurious, both as regards the health of the cows, and the quantity and *quality* of their milk. I cannot resist the
impression that the author of this pap
not a practical farmer, and has never
sessed a herd of cows, or he would not
endeavoured to circulate doctrines so
neous. That to house milch cows in
airy buildings, during the severity o
winter season, when the pastures a
such a state from frost or wet, that
will either yield no food, or else be
to receive serious injury from tram
is absolutely necessary on the gene
of farms, I will not dispute, and s
not myself think of pursuing any
system: at the same time it is esse
necessary that there should be att
to the cow-houses a spacious, well lit
well drained fold-yard, into whic
cows may be turned out, for two or
hours at least, in the middle of
moderately fine day, and it is equal
sential that the houses themselves s
be cleaned out and fresh littered eac
But I do not hesitate to say, that the
tice of housing the cows througho
year is equally expensive to the fa
and injurious to his herd, and I wond
to hear that the statements made by M
Wilbraham and Wild at the Manc
agricultural meeting, were received
a smile of incredulity by such at le
their audience as were practical a
perienced farmers: far wiser had it
for the chairman of such a meeting to
called upon some agriculturist prese
sound judgment and experience, to
the merits and demerits of the two sy
of feeding, and what he had found by
trial to be their respective cost and
There would not then have been the d
of some young inexperienced man, w
attended that meeting, for the sake of
ing information, and profiting by the e
ence of others, running away with th
notion that he had acquired a syst
which he could keep two cows at the
expense as he formerly kept one.
object now, is not to go into a detail
ill effects resulting from the practice

feeding cows in any part of the kingdom, and on any description of land, but simply to hold out a friendly warning to such as are just commencing their agricultural career, and for the sake of improving themselves, make a point of attending agricultural meetings, and reading agricultural works, to be very cautious how, without areful consideration, they adopt systems nd try experiments, however plausible on he first view, whilst the former are yet nsanctioned by experience, and the latter erhaps are neither more nor less than the ague and visionary calculations of some *eoretical dabbler* in agriculture. Far be from me in any way to damp the ardour f the young and enterprising agriculturist, n the contrary, I would encourage him by very possible means, both in scientific esearch and practical improvement. Of ll the professions and employments, in hich mankind are engaged, there is none erhaps which requires more *practical study* an agriculture; and it is equally true, at without a thorough understanding of s business, a farmer may easily lose a ge amount of capital in a very short ace of time, and almost without perceiv- g his danger. Of what infinite import- ce then is it to the young farmer, in the t place, to acquire a perfect knowledge his profession, and then to be ever on guard, lest by some incautious step he ould take a dangerous leap in the dark. r is it any argument in favour of a wly started theory, that it is merely an l system revived, and that we had the thority of the ancients to back us; we ould rather (if the simile may be al- wed) imitate the cautious proceedings of cool and practised hunter at a rasping nce, with doubtful ground beyond, and er which he perceives several of his pre- cessors have fallen, when by a well- nown skilful manœuvre he will carry his der safely over that which his more im- tuous and inexperienced companions uld not clear. We should not in the present day dream of implicitly adhering to the rules and maxims laid down by Virgil in his Georgics, though it is questionable, whether the experience of the Roman Poet-farmer, in the management of his Sabine farm, is not more to be relied upon than that of "honest Tusser," whom *Hark! Forward* quotes with such reverence, and upon whose authority he seems to place such reliance.

His remarks upon cheese are equally false and ridiculous. They may be in accordance with scientific principles, but they certainly are not so with practice. We know, indeed, that it is impossible to obtain butter from *milk*, and that it can be produced only from *cream;* but to affirm that the latter substance does not *combine* with the former, in the composition of cheese, is an absurdity, which any dairy lassie in the kingdom, who has ever made either new-milk cheese, or that which bears the name of Stilton, (made in the rich vallies of Leicestershire and composed principally of cream,) can easily attest. *Hark! Forward*, may talk of *solidified cream*, and call cream-cheese a paradox, but we find that the profits arising from the manufacture of new-milk, or of Stilton cheese and whey butter, from the time the grass comes in spring, till it becomes husky in autumn, are much greater than can possibly be derived from making cream butter and skim-milk cheese, during the same season.

With regard to the practice of milking the cows in the open air, I know not whether it *generally* prevails in Lancashire and Cheshire; though, in the latter county, I could point out more than one well-managed dairy farm, where no such thing is allowed. I have visited the principal dairying counties of this country, and could name several farms which are allowed on all hands to stand unrivalled, both as it regards their general management, and the quality of their respective produce. In none of these has the custom of milking in the fields ever been known, nor in a single in-

stance are the cows stall fed. A little boy is employed generally to bring up the herd, morning and evening. When all the cows have arrived in the fold-yard, a boy is stationed at the door of each house in which they are milked, and calling every cow by name they readily obey the summons, and, one by one, without any hurry or confusion, arrange themselves in their respective places. Nothing can be simpler than this plan, and the cows will, after two or three days, not only know their names, but also their own particular standing place, in each house.

With respect to the last part of *Hark! Forward's* communication, in which he mentions having seen a herd of cows, shivering in a Cheshire lane, in the depth of winter—I can no more account for such a proceeding than he can, it not being usual, I believe, in any part of the country, to turn cows out into the roads, either in winter or summer. The introduction of an Irish herdman, however, just at the interesting moment, when having concluded his silent soliloquy, on behalf of the cows, *Hark! Forward* was on the point of indulging, as he informs us, "*in friendly invective suited to the occasion,*" gives rise to a suspicion, that perhaps, after all, the cows were merely travellers on the road, and simply passing to or from their place of milking. I feel sure that the readers of the *Farmers' Herald* must feel deeply obliged to *Hark! Forward*, for the narration of a dialogue *so marked by its brilliant wit, and keenly pointed satire*, as that which ensued between himself and his Irish friend.

I must now conclude these few remarks, again cautioning the young farmer not to be too hasty in adopting new untried systems, and plausible theories, unsupported by practice. While I would urge him most strenuously to put forth all his energies, and to strain every nerve, in the pursuit of agricultural improvement and discovery; I would at the same time press upon him *the necessity* of advancing with care and prudence, lest by some incautious
ment he may haply cripple those e
which promise to be so serviceable
himself and his fellow creatures.
lastly, I think I cannot do better t
commend him to take for his m
wholesome advice of a skilful tacti
former days, which he may proba
member :—Si possitis, *celeritèr* ite,
tamen, *vigilantèr.—Festina Lentè, F*

◆

STALL FEEDING MILCH C

YOUR last number contains an int
and humorous article upon the su
"Stall-feeding Milch Cows," whic
happy to find your correspondent '
Forward!" intends to continue.
doubt a subject of the first importa
I consider that its adoption by
would be of incalculable benefit
themselves and to the community.
therefore venture to suggest to you
spondent whether a more *practical* e
tion of the subject would not be desi
for instance, what would be the n
vantageous way of cropping a far
40 acres of arable land, with a vie
above system—the weight of gre
necessary for a milch cow during t
whether it is necessary to cut it f
each feeding time, &c., together wi
further directions that may be dee
cessary.—*Agricola, Llangollen, Feb.*

◆

No. 2.

THE SOILING OF MILCH CC

"Quoth Sidrophel, 'It is no part
Of prudence to cry down an art,
And what it may perform deny,
Because you understand not why;
For who knows all that knowledge cont
Men dwell not on the tops of mountains
But on their sides, or risings seat;
So 'tis with knowledge's vast height.'"
Hudibras, Part II., Cant

"Where nature points out, or leaves any op
improvement in the use of any of the common
ries of life, it is the duty of individuals to take
to weigh, investigate, and explain them for th
good."—*Twamley's Dairying Exemplified*, 178

In following up the subject to
have ventured to draw the especial
tion of agricultural readers, I perhap

to quote a sentiment expressed to me by very sensible practical men, that "there is no branch of husbandry of more importance at the present time, or that gives a larger field for improvement, than the conducting and managing of dairy farms;" an opinion coinciding with that of honest old Twamley, the Warwickshire Cheese Factor, and expressed verbatim from his excellent essay on the dairy, a work which I rejoice to learn is in the course of re-publication, and which I trust will speedily find its way into the hands and head of every dairyman and maid ambitious of shining in their own peculiar art, satisfied as I am that the best of them will find something in Twamley to make them better if they will let him, and to convince them that some "people who write books" know, perhaps, as much about making cheese and butter as those who despise books, and have such droll notions as to fancy *themselves* the *best judges* of *their own plans and handy work*. Such was the pinion of Twamley, sixty years back; such the present opinion of individuals whose inion I am disposed to respect; and such idently is the impression of those parties ho are promoting the reprint of Twamley, d about to give him increased circulation. hall not, however, here stop to shew the uth of the assertion that this "is an im-rtant branch of husbandry." The two ndred Glo'ster and Cheshire dairymaids at have gone to America in search of oney, milk, and matrimony, and the ship-ads of cheese that Jonathan "guesses he eans to send us in all 1845," will very ortly convince the most sceptical on that ead.

Being anxious to direct attention to the actical examples and experimental proof favour of the theory of house-feeding ilch cattle, I shall not make any studied fort to penetrate the veil that conceals om us the precise time and place that ve rise to the practice, but content myself ith observing, that there can be little ubt it was first in use among those painstaking and economical farmers, or rather gardeners, the Dutch and Flemings, whose studious culture and careful application of their grasses, as well as pet guardianship of their milking cows, have made them honorably proverbial wherever intelligence is found connected with the scythe and the plough, the pail and the cow.

Commencing our enquiry, therefore, within the limits of living memory, we find that when the celebrated Arthur Young was relinquishing the business of wine merchant, and entering on his useful and illustrious career of agriculture, his friend Joseph Marshall, Esq., the traveller, (so called by me to distinguish him from Marshall, "the ruralist,") was engaged in making his very observant and utilitarian tour through Holland, Denmark, Sweden, &c. Perhaps no gentleman of fortune, travelling for pleasure, ever paid such minute attention to useful subjects (chiefly agricultural) presenting themselves to his observation, as did Mr. M., whose volumes are singularly replete with highly curious and interesting notices and facts connected with husbandry. Speaking of the management of green crops in Flanders, in the year 1768, he observes—"Another use to which they put it, is that of *mowing it and giving it green to cattle in houses, instead of letting them eat it in the field;* they assert that in this mode of consuming it, *one acre goes as far as several.*" Shortly after this period, we find an enterprising and enlightened practical agriculturist of Germany, (Baron de Bulow, a native of Hanover,) paying considerable attention to the experiment of stall-feeding milch cows, and his experience on the subject is fortunately within our reach. The metropolis of Hanover formed at the time alluded to, no exception to the general rule, that in every city of the world there are to be found unlucky misdirected cits, chained by fate to the oar of trade or profession, whose imprisoned souls pant constantly after other occupations and pursuits of kinds congenial to their tastes; of these, the most numerous are such whose inclination leans towards rural employments, amongst which are to be found instances that sometimes surprise and sometimes annoy the hereditary husbandman, of individuals bringing to the study, and I may add, the aid of agriculture, only the gleanings of their time, but whose extensive reading, close and incessant observation, keen investigations and research, and attentive study and accumulation of other men's experience and practice, in some degree make up for the want of their own practical knowledge, and serve to render them of use to the art, and to qualify them for pursuing it advantageously when the opportunity may present itself for their so doing. Among the professional citizens of Hanover, cotemporary with Baron Bulow, was a young medical man, whose abilities in his profession had secured to him the appointment of royal physician, in which capacity he found opportunities for studying agriculture and husbandry, and with all the usual ardour and enthusiasm of an amateur, contrived to give to the world, with other agricultural matters, the results of his friend's (Bulow's) experiments; this individual, to whom Germany subsequently became deeply indebted as her great georgical preceptor, was the celebrated Albert Von Thaer, who has furnished us with the following summary of Bulow's experiments, as "incontrovertible facts," viz.:—"That a spot of ground which, when pastured upon, will yield food only for one cow, will abundantly maintain four head of cattle in the stable, if the vegetables be cut at a proper time, and given to the cattle in a proper order. *Secondly*,—That stall-feeding yields at least double the quantity of manure from the same number of cattle, (hence *eight* times the quantity of manure from the produce of the same field,) the best and most efficacious summer manure is produced in the stable, and carried to the fields at the most proper period of its fer*mentation*, whereas when dropped on the meadow, and speedily exhausted by the air and sun, its power is entirely wasted. *Thirdly*,—That cattle *used* to stall-feeding will yield a much greater quantity of milk, and increase faster in weight, when fattening, than when fed on the field. *Fourthly*,—Cattle are less subject to accidents, do not suffer by the heat, by flies and insects; are not affected by the baneful fogs that are frequent in Germany, and bring on inflammations; on the contrary, if everything be properly managed, they remain in a constant state of health and vigour." It is however to be noticed, that these observations appear to refer mainly to green crops, and what we call artificial grasses, as clover, &c., and not to culmiferous grasses, to which, however, they as strictly apply in principle, and provided our meadows ar as suitable for frequent cutting, the cas are the same, as I shall hereafter prove.

In the publication of Dr. Thaer, fro which the foregoing extract is taken, expresses an opinion that the stall sys of feeding on green herbage, has nev been adverted to by the farmers or agric tural writers of Great Britain. In opinion, however, he is quite mistaken, nearly a century and a half ago, clover rye grass, where cultivated, were cut gr and employed in soiling as at present, existence of which practice amongst three score years before Thaer's time, recorded by Mortimer, in his "Whole of Husbandry," published in 1706. It also to the credit of British agriculture the first experiment of this kind, with *natural* grasses, was made by one of countrymen, of whose attention to the ject a short time antecedent to that Bulow's and Dr. Thaer's, they were aware. I allude to Dr. Anderson, one the most pleasing and sensible of our wr on rural affairs, who, like Thaer, was a physician, but preferring farming to practice of physic, proved himself, in tw years successful cultivation of a 1300 farm in Aberdeenshire, one of the best,

best, butter dairyman the country
duced; his rules are axioms on the
ment of milk having become the
of all subsequent writers on the
—the "Euclid's Elements of Dairy-
The circumstance which made him
vert to the benefits derivable from
ing grass lands by cutting, in pre-
to pasturing them, was purely
tal, and no less interesting, and
erhaps the first *recorded* experiment
application of the common pasture
to the stall-feeding of milch cows.
," says Dr. A., in his "Third Essay
Economical Consumption of the
e of a Farm," *written* about 1796,
tty long and broad grass walk, lead-
m my house to a garden; as the pile
this green avenue was extremely
I found it pleasing to walk upon while
om wet, even when the grass was
than an inch in height. Instead,
ore, of having it close cut like a
very three or four days, and throwing
veepings away, as usual, it occurred
that by cutting it less frequently, I
l be able to have the use of my walk,
t the same time lose no part of its
ce. I had it, therefore, cut so as to
of being given with economy to my
while in the house. As much grass
ut each day from it as served them
me time: and so proceeding on re-
ly, first cutting one side of the walk
end to end, and then the other, the
l being frequently rolled when fresh
specially after rain, to keep the sur-
smooth, so as to allow the scythe to
uite close. In this manner I not only
ted the purpose originally intended,
*to my great surprise, I had soon occasion
rceive that my cattle thus obtained food
h greater in quantity, as well as sweeter
uality, than I had ever been able, under
other mode of management, to obtain from
ame extent of ground.* This grass was
six or seven times during the season,
at each time the quantity, on account of the extreme closeness of the pile, was much greater than I could have supposed, and of a much sweeter quality also." Dr. A. then goes on (with that nicety of observation which it is strange should be found so much more prevalent among men of philosophical minds, who merely love knowledge for its own sake, than among those to whom such knowledge is "as good as money," and who pay rent for their grass lands) to remark, "there was not in the whole, a blade of grass bruised or decayed, so that the cows devoured it with inconceivable avidity, whereas, upon such rich land, had it been allowed to stand a little longer, the root ends of the grass would have begun to wither and turn musty for want of air, though the top continued green; and some stalks being choked by others, would not only have begun to rot, so as to have become unpalatable to the animals, but their roots also, being suffocated, begun to die out, the grass thus becoming thinner, so as to be longer springing up after cutting, and thus the *quantity* of produce diminished as well as its *quality* impaired. Some farmers, to whom I showed this experiment in its progress, judged, when they saw the grass growing, that it would be too short for it to be worth cutting, but, when I caused some of it to be cut before their eyes, the *quantity* laid down by each swathe was so much greater than they expected, as to excite a high degree of astonishment. Some of them even admitted that the quantity of forage thus obtained at one cutting, though it did not exceed two inches in length, was in their opinion equal to that obtained at one cutting of red clover, and my own opinion coincided with theirs. This experiment" (which it is to be remembered was made in Aberdeenshire half a century back) continues he, "first suggested doubts in my mind as to the propriety of consuming *rich* grass lands by pasturage; and every observation I have since made, has tended so strongly to add to my conviction, that I

have now not a doubt remaining on this point; and I conceive that the loss which is sustained by the nation at large, from inattention to this circumstance, is so great as in some measure to call upon me to publish these remarks, with a view to induce others to investigate the subject with greater care than hitherto; for, however inattentive men may be for the present to these hints, a time will come if they are made public, when they will claim the investigation of some considerate mind. When that time comes, my object will be attained."—These interesting observations were published about 1795, and were followed several years after by their writer's more matured opinions, which will be noticed in the sequel. Meantime, by a curious coincidence, which goes far to secure for Cheshire the honor of *originating* this practice, a gentleman named Hampson resident in the neighbourhood of Stockport, and supposed to have been a member of the Manchester Agricultural Society, as was also Dr. Anderson, (who appears to have been intimately known in this neighbourhood,) was at this period directing his attention closely to the subject, evidently without the least idea of any other individual having experimented thereon. Arthur Young had written, between 1767 and 1794, more than twenty volumes on farming subjects; and the "Annals of Agriculture," and other periodicals of like character, had been on foot many years prior to the latter period; but as Dr. Anderson (a very candid and upright man, and extensive reader) makes no reference to other writers and experimentors on the the subject, it leads to the belief that no such had preceded him; a remark that also applies to Mr Hampson, who, in 1796, published a very well-written and spirited pamphlet (printed at Stockport,) entitled "An Essay on the Management of Cows, shewing the disadvantage of the common practice, and how a greater number may be kept on the *same space* of ground by a *new mode of treatment.*" To extract all that deser
publication from this clever essay, wo
be to reprint it. On the present occasio
must content myself with stating, that
observations are given as "the result of
small attention to the subject;" that
experience as to the advantages of cutt
grass and feeding with it in the stalls
conclusive in favour of the practice,
more profitable as respects the cattle,
quantity of milk, and the application of
fields, of which he says, "I know from
periment, that meadow land may be c
ped (with the scythe) from four to six ti
in a year;" and that, with proper man
ment, this may be done, so as to impr
instead of exhausting the land, shall
demonstrated in the sequel. Meanti
perhaps some of your readers can fur
me with information as to the family,
residence, &c., of Mr. Hampson, at
period when he wrote upon this subj
the investigation of which I am of co
desirous to render as ample and comp
as practicable. He was the author
poem, entitled "Duckinfield Lodge," p
lished in 4to., in 1793; and contribute
the Transactions of the Society of Ar
paper "On the preservation of fruit t
from the caterpillar;" but where he p
tised farming, I have not yet ascertai
The present may perhaps suffice as a
liminary glance at the origin of the the
and practice of soiling milch cows.
next will be devoted to a more minute e
bition of the benefits derivable theref
illustrated by practice brought down to
own days, and the experience of par
dwelling around us.

I may, in conclusion, observe, that
practice of stall feeding fatting cattle
fresh cut green crops, must have at ti
included milch cows; and that this m
of treating the pet cows of the farm
wife, in the arable districts, where only
or three cows may have been kept
farm, for the supply of the establish
and neighbours, is evidently of some

ty, from the old traditionary term by
h it is known, "*petting.*" The fore-
is, however, I apprehend, the earliest
hed account of it, and exhibits pro-
the first written appeals in its favour,
ystem meriting the wholesale adoption
iry farmers. An antiquarian friend is
inion, that the practice is decidedly
ue amongst us, and has had its sup-
rs in olden time, who were evidently
contends) hostile even to sarcasm
st the pernicious pasturing of milch
all weathers in open grounds, and the
ing them (with Fahrenheit at Zero,
very body else at the fireside) to get
dinners, like Lapland reindeer, by
hing for it in the snow. He contends
the humane views of some of our
tors respecting milking moollies, are
ly discernible in a rude but intelligible
h, orally handed down to us, and
has occasionally been heard in the
ern counties within living memory,
as follows:—

"Milly moo, cow co, (cold)
Get your belly full of snow."

arned friend's *unde derivatur* remind-
e of some of Dean Swift's Etymologies
disposed, at first, as the reader no
is, to indulge in a smile at his ex-
; but recollecting that my Lord Bacon
somewhere, that "the sayings and
rbs of the common people are gener-
ommon sense handed down to us
d and dried," I thought better of it,
herefore leave it in the hands of the
rs and the fellows of the antiquarian
ies, to dispose of as they may think
r.—*Hark! Forward!*

◆

OUGHTS ON AGRICULTURE.

BY I. J. MECHI, ESQ.

the bad state of cultivation in the
d Kingdom arises from two causes—
of knowledge and deficiency of capital:
at there is not at present employed in
ulture a sufficient capital to farm the
properly:

That capital will not flow into agricultural channels whilst farming is so commonly an unprofitable occupation:

That it is unprofitable more frequently from want of knowledge than deficiency of capital:

That were the necessary capital forthcoming, there is not amongst landlords and farmers generally a sufficient agricultural information to apply such increased capital profitably:

That to employ the present capital of agriculture to the greatest advantage, the existing holdings should be diminished in extent nearly one-half, the labour and cultivation doubled:

That there exists amongst farmers generally an unprofitable desire for large holdings, with a small employment of labour, capital, and implements:

That the generality of landlords and farmers consider £7 to £8 per acre a sufficient investment; whereas double that sum is scarcely an adequate profitable capital, affording the means of effective cultivation:

That the non-valuation of tenants' improvements to the succeeding tenants, and the facile appropriation of those improvements by the landlord to his own use, in the shape of an increased rent, blinds him to equity, has a tendency to cause frequent removals, and is a premium to bad cultivation and non-improvement:

That annual tenures, short leases, and a mistaken affection on the part of landlords for ugly worthless pollards and scrubby stunted timber, are important causes of loss in agriculture:

That a morbid desire to retain a political and feudal influence over the conscience of the tenant prevails extensively, is discreditable and demoralizing, having no good effect, but creates subserviency and a want of manly independence on one side, and on the other a tendency to injustice or oppression:

That the letting of farms should be treated as a matter of business, in which the obligations and benefits are as mutual as in any other pecuniary transaction of trade or commerce:

That the remedy for these evils is the communication of agricultural knowledge to both landlords and tenants:

That this knowledge will be best promoted and diffused by agricultural schools or colleges, with farms attached, on the principle of that excellent one now establishing at Cirencester:

That there should be one or more such establishments in every county in the United Kingdom:

That there should be agricultural endowed colleges of the first order under authority, where students should qualify by superior practical and theoretic knowledge, passing their examinations, and obtaining their agricultural diplomas the same as in law or medicine:

That such qualified individuals would thus spread over the country agricultural schools and farms, advantageous alike to themselves and to the rising generation of farmers, who would imbibe sound theoretical and practical instruction:

That such instruction would render farming a more uniform, more profitable, and more gentlemanly occupation:

That in consequence capital would more readily be attracted to farming purposes in ample amounts, the character of our farmers raised, the strength of our nation increased, and ample provision made for years to come, for the employment of our increasing population and capital:

That if knowledge is power, ignorance must be weakness, individually and nationally:

That increased knowledge, capital, and profit in our farmeries must enhance the value of landed property, increase the comfort and intelligence of the landlord and labourer, and have a beneficial influence on trade, commerce, and manufactures—for we are all links in one great chain, depending on each other for support.—*Feb.* 4.

SALT, SULPHURIC ACID, & B

Having applied one sack of salt p
on some turnip land, afterwards
one bushel of bones dissolved in i
weight of sulphuric acid, the turnips
Salt should never be used with su
acid for the reasons kindly stated a
by Mr. Bree.—I. J. Mechi.

"Your experiments with turnips clea
from the presence either of free sulphu
or salt in the soil, either of which will
vegetable structure. When salt is add
soil it is decomposed by the calcareous
and its bare soda being set free is app
by the plant.

"If you use it with sulphuric acid i
decomposed, by the acid forming sul
soda; but you also set free the muriati
the salt, which is positively fatal to ve
The union is bad, and I am not at all
at its failure. Sulphuric acid must no
in a free state. If in saturating urin
composing bone-dust *too* much is add
tive injury must be the result. In dec
putrid urine you have carbonate of
and sulphuric acid.

"The carbonate of ammonia, a pun
—the acid the strongest known in che

"But what is the result? it is this:-

Carbonate of Ammonia.

Carbonic Acid. (given off) Ammonia. Sulph

Sulphate of Am

which is a salt harmless in its physical
ter, and totally unlike either the am
sulphuric acid, of which it is composed

"It is the salt which forms the basi
and of guano. But, *per se*, it will
corn! It contains, however, one of t
valuable ingredients of manure—the
which is necessary to form the gluten i
and, subsequently, the *muscle* in anim
ture.

"In urine, however, you have mo
other ingredients, and when added
manure all of them. You have the
in fact, with a generous soil, to grow
heavy again as it has hitherto been.
my firm opinion.

"Let me recommend you to collect
experiment the next wheat crop) all t
you can get into your tank—human
you can get it; when putrefying add
of sulphuric acid diluted with two,
four of water; add it until effervescen
Apply this in different proportions to yo
land, and carefully note the result.

"You will perceive from what I

hat the union of lime and salt, according to ur friend's plan, is correct and judicious. I onsider, in fact, the presence of lime in the il essential to the success of salt as a manure."

◆

DRAINING STRONG LANDS.

the monthly meeting of the Darlington armers' Club, held on the 10th ult., at the ce of Mr. Thos. Dixon, land agent, the owing gentlemen were admitted mem- of the club :—G. H. Wilkinson, Esq., perley Park; — Ornsly, Esquire, Dar- ton; Francis Newburn, Esq., Darling- ; Monsieur De Baste, Darlington; Mr. Dobinson, Summerhouse, and Mr. T. A. ey, Yarm. The subject under discus- was "The most advantageous method Draining Strong Lands." There was a attendance of members, several of m took a lively interest in the discus- , and expressed their opinion and prac- fully on the subject. In the absence Henry Chapman, Esq., who was pre- ed by indisposition from attending, Mr. lton, the vice-chairman, presided, and oduced the subject by reading an essay the pen of Mr. Davidson, illustrated he plans and sections of the drainage me fields, very efficiently drained by whilst farming in Northumberland. Walton said that there could not be two tions with regard to the value of efficient ning, as that was admitted by all par- : he then stated his views with regard horough draining generally, and said he believed that drains, whether laid tiles or stones, or with both, that is, ken stones upon the tiles, that in the age of strong or clay lands the drains uld not be less than from 2½ to 3 feet p. Mr. Pearson thought that in strong ls the drains might do 2 feet deep, but certainly should not be less than that th, for he had found by experience that er is more liable to stand above a shal- drain than a deep one, and therefore would never put down drains of less th than 2 feet. Mr. Parrington said that he had drained a good deal at a considerable less depth than two feet; he thought that from 18 to 20 inches, where it was not intended to subsoil, was sufficient: he had lately seen a field belonging to an acquaintance, which was two yeare since very efficiently drained at a depth of 16 inches; in fact it was astonishing, the improvement that had been effected in it thereby. Mr. Johnson said that for several years he had been in the habit of draining large quantities of land, and had always found it to answer all his expectations: he had generally drained from about 20 inches to 2 feet deep, and about 15 feet betwixt the drains. A great portion of the land that he had drained at Cleasby was of a very poor description, and was generally said to be land that was not worth cultivation, but by draining and management he had grown on some of that poor land 80 bushels of oats per acre: he had at present in a field of that description 10 acres of beautiful turnips, and this was land on which no one would have thought of growing turnips until after it was drained. Now although this system had answered all his expectations, yet from what he had heard, and from what he had read, he was now on one of his farms near Hornby Castle draining from 2 to 2½ feet deep, hoping that this depth might still answer a better purpose. The secretary said that a great deal of difference in opinion existed with regard to the propriety of admitting the water directly in at the top of the drains; some parties were in the habit of putting broken stones upon the tiles in order to admit the water from above—others used furze, underwood, stubble, or straw, for the same purpose whilst, on the contrary, some parties rammed the earth, and others even puddled the tops of the drains to prevent the water having access from above: the question in this respect, at present more particularly, was, in draining the clay lands of this district, (and considering, at the same time, that it will in some degree increase the

expense,) whether it is desirable in any case, in order that the drains may more readily become effectual, that any porous substance should be laid upon the tiles that will admit the water readily from above; or is it more desirable to at once endeavour to prevent the water from having access from above, and by that means prevent any possibility of any sand or sediment being carried down into the drains with the water. Some discussion on this subject then arose, when it was considered by some of the members that as there is very little (if any) danger of sand washing from the strong clay, through furze, straw, or underwood, into the drains, and considering at the same time, that in land of this description the drainage is longer in taking effect, it might in many cases be advantageous to use means to facilitate the effect of the drainage. Others, however, were of a different opinion, and thought the water ought in no case to be admitted from above. The meeting was, however, nearly unanimous in opinion that from 15 to 18 feet betwixt the drains was a good width, and that in all lands that are effectually thorough-drained the land ought to be laid perfectly level, high ridges being no longer necessary. The unanimous opinion also was that efficient thorough-draining can only be done at the expense of the landlords, as no yearly tenant could be expected to drain efficiently unless he were certain of being benefited by his outlay. A question then arose as to the comparative expense between using common draining tiles or pipe tiles, and Mr. Pease referred to a table by Mr. Pusey, in the Journal of the Royal Agricultural Society of England, shewing that the total expense of draining an acre with 2-inch pipe tiles would be about £3. Mr. Parrington said that he had been draining with No. 1 tiles, the total expense of which per acre, exclusive of leading tiles, was £3 5s. Mr. Johnson stated that his draining generally had cost upwards of £4 per acre. The subject fixed for discussion at the March monthly meeting is "*Th*
best Rotation of Crops for Strong and Ligh
Lands."

◆

DISEASE AMONG HORSES.

I beg to request the insertion in your journ
of a few remarks on the subject of a diseas
which is making ravages among horses.
neighbour of mine lost three of his horses l
week by the malady, and has now three or f
affected by it. It has also appeared in
stables of another neighbour. The ignora
which appears to prevail of the disease,
consequently of any efficient mode of c
renders the subject of medical treatment one
very serious import to the owners of those va
able animals.

From the little I have seen of the dis
its distinguishing feature appears to be inf
mation somewhere, which, if not spe
checked by prompt and active means, soon
minates fatally; my neighbour's horses hav
died in from two to four days from the c
mencement of the attack. I am further c
firmed in my opinion of the inflammatory
ture of the disease, from two facts, viz.,
some horses that were seized by it were
bled, and soon recovered; and those that
had *not* been bled at all.

In making this communication, I am in
enced only by a desire to excite the attenti
those who are most interested and most co
tent to treat the matter properly. I ca
however, conclude without a word or tw
stable management. We all know that
air is essential to the health of every ani
and it is quite obvious that close, dirty, an
ventilated stables must be injurious to
health of the inmates. The filthy practi
heaping wet and foul litter under the ma
where it is all day heating and fermenting,
which, when scattered under the horse at n
sends out a most noxious vapour, cann
too severely reprobrated.—M.—*Bell's W*
Messenger.

◆

ATMOSPHERIC ELECTRICITY A PROMOTER OF VEGETATION.

In October last, Mr. Gorton, of Nash H
announced to the Tring Agricultural As
tion, the then immature results, or rather p
pects, of some experiments which had be
stituted by Mr. Forster, of Findrassie,
Elgin, on the application of Atmospheric E
tricity to the promotion of the growth of p
those prospects (promising as they then
have since more than realized the expect
then formed, inasmuch as Mr. Forster

hrashed, weighed, and measured 15 bushels of hevalier barley, 54 pounds and a quarter to he bushel, from an electric area of 23 perches f land only, being at the rate of upwards of 04 bushels to the acre, with *more than three imes* the weight of the ordinary quantity of traw. The barley outside the insulated area, nd therefore not within the influence of the tificially excited electricity, did not exceed a od average crop in either grain or straw.—hese facts will almost electrify some of our ricultural friends, and no doubt occasion dis- st or suspicion in the minds of others, as to e correctness of the data and other accom- ying circumstances. Our informant has quired carefully into them, and has at present reason whatever to question their accuracy. r. Forster, it will be seen, even prematurely nounced his discovery in the most frank and interested manner; and, if he has stated any g incorrectly, he is open to contradiction hundreds of his neighbours who watched barley from the seed time to the harvest.

Mr. Forster first defines, or incloses as it e, a given area of land, in the form of a allelogram, to be experimented upon (say a rter of an acre, or about 55 yards by 22) h common iron wire, of 4d. to the pound, ich is buried in the ground at a depth of m two to three inches, and fastened at the ners by dry wooden pins. In the centre of inclosed area he erects two stout poles of pine or fir wood, 15 feet above the surface the ground, and 45 yards apart, and placed netically north and south. Over the tops these poles a stouter iron wire is extended, descends from them at either extremity, the fore-stay of the mast of a ship, and is tened to the ground by a strong, dry, wooden oked stake, and, of course, in immediate mmunication with the buried wire. The cost this apparatus, including labour, is only 5s. would be considerably less, in proportion, pplied to a greater extent.

He thus establishes an insulated electric a, and having determined the principle, the tended application of it, modified according circumstances, becomes simply a question of gree.

One of the most interesting results which e come to our knowledge is, that barley der the central suspended wire, grew higher more vigorous than the rest, as if every d and blade of corn strove to attain the rce of the arrested element.

In September last, Mr. Stevens, an artist of in, stated to Mr. Gordon, that he had seen ley growing at Mr. Forster's of Findrassie, der the influence of atmospheric *electricity*, strong *and luxuriant as if it had been sown* on a dunghill. Mr. Gordon having ascertained its correctness, seized upon the fact; and, with the hope of seconding the disinterested views of Mr. Forster, and making them more extensively known, liberally offered to give a prize of £30 (through the Council of the Royal Agricultural Society) for the best Essay on Electro-culture. For reasons hitherto unexplained, the offer was declined.—*Bristol Mirror.*

◆

WHENCE DO PLANTS OBTAIN THEIR CARBON?

The following is the substance of a lecture lately delivered by Dr. Lyon Playfair at the Manchester Athenæum:—

There are obviously only two sources whence the matter of the future tree can come—the soil and the air. A large volcanic island, such as that of St. Helena or Ascension, is pushed from beneath the sea; and its crater pours its red-hot lavas for a time over its surface. But, gradually, that volcano becomes extinct; and the frosts, the rain, and the wind, beat on its surface, until the hard lava is softened into a soil. Then the birds, resting on the island during their migratory flights, shake off the seeds of other lands, which had become entangled in their plumage, and the seeds take root on the barren rock. Nature did not forget her usual wisdom, when she coated so many useful seeds with waterproof coverings, and shaped them like canoes, so that they might toss uninjured on the billows, until they are wafted on to this newly-created land, which in time becomes covered, as St. Helena was when first discovered, with large forests and luxuriant vegetation. In this and such cases the carbon could not come out of the soil; hence it must inevitably either come out of the water, or be extracted from the air. From pure water it could not come; for *it* contains only hydrogen and oxygen, without a trace of carbon. In some water, however, carbon must be present, or how would aquatic plants, or seaweed, obtain their carbon? Bonnet was the first to observe, that, if leaves be put in a tumbler containing water, they emit bubbles of air. "Ah! but," said his objecters, "the air was taken down with the leaves;" so Bonnet used water from which the air was completely expelled by long boiling, and he put his

leaves into this, but no bubbles of air now escaped. Sennebier proved that it was only from water containing carbonic acid gas that these bubbles of air (oxygen) were evolved—carbonic acid consisting of carbon and oxygen. This was the key to the mystery; it was by the decomposition of the carbonic acid in the water, and the evolution of oxygen, that Bonnet had observed his bubbles of air. No wonder now that he could not get them when he boiled the water, because all the carbonic acid had been expelled. Sennebier's experiment certainly implied that carbonic acid was favourable to growth; but by implication merely, not by direct proof. This honour was reserved for two Manchester men, Dr. Percival and Mr. Henry, who showed that a small amount of carbonic acid in the air was favourable to growth. It was now very easy to conceive how plants obtain their carbon, if they were constantly supplied with carbonic acid, from which to extract its carbon. Now it had been clearly proved, that there is always a certain amount of carbonic acid in the atmosphere. But my auditors may ask, "Is the small quantity of carbonic acid in the air, scarcely amounting to one-thousandth of its weight, sufficient for the wants of all the vegetation on our globe?" Calculate how much charcoal is contained in the atmosphere in the quantity of carbonic acid, which, viewing it only with reference to the limited sphere around us, we term small. Why! more than 3000 billions of pounds of solid carbon exist in it—a quantity very much greater than is in all the coal on the earth's surface, and infinitely greater than the carbon in the growing vegetation. Satisfied as to quantity, they may then justly ask whether plants can absorb sufficient carbonic acid from a medium containing a proportion so small. That they do absorb it, had been proved by Boussingault, who put a Vine branch in a glass globe, and then caused a current of air to pass quickly through it. He analysed the air before it reached the Vine, and the same air after it had passed, and found that three parts out of the four of carbonic acid had been absorbed by the leaves. Liebig made a *striking* experiment to show how much carbonic acid could be extracted from the air in a
time. Lime readily absorbs this gas fro
air. Now Liebig, in whitewashing his l
tory, ascertained by an experiment how
the lime in drying absorbed of carbonic
and applying his result to an English acr
posing the leaves of plants growing on
the same powers of taking up carbonic
lime, they would extract from the air
days no less than 1,800,000 cubic feet
gas, or upwards of 6000 lbs. of carbo
being about three times the quantity of
actually taken up in the same space o
and on the same surface, by a growin
It is quite certain then that there is a suff
of carbon in the atmosphere to support
ing vegetation; and equally certain it
plants do absorb carbonic acid, retain its
and liberate its oxygen. This carbonic
taken up by plants in two ways. *The
and indeed all the green parts of plants,
it directly from the air; and it is absorb
by the roots, dissolved in the rain which
freshed the ground.* I have already state
it is only with the concurrence of lig
plants are enabled to break up the carboni
and assimilate its carbon. In the dark, a
the leaves cease to act; they no longer
carbonic acid, but in fact are found to em

Now for one of those remote analog
which I have complained as being so m
vous—Saussure compared the absorpti
carbonic acid during the day to the resp
of animals, and its exhalation at night
expiration. The hunters after analogy
splendid chase in this announcement, an
madly enough in pursuit. Professor
soon saw a digestion and respiration in
they are *always* respiring, according to
but only digesting their food during th
the waste matter of their digestion is
and is thrown out in the form of a gas;
at night, when digestion ceases, carboni
alone is respired and expired. Ellis,
saw in this inspiration and expiration a
librium, and denied that the atmosphe
improved by vegetation, for that as muc
bonic acid is evolved at night as is deco

ing the day. In this he was undoubtely ng, as shown by Daubeny, who proved that acted upon sickly plants, and that healthy nts always decompose more carbonic acid ing the day than they give out at night. Daubeny was too late to arrest the current opinion. The hunting horn had been nded, and away went one philospher after ther, stumbling in most unphilosophic hion, after this remote analogy of the nutri- of vegetables to that of animals. It was a ple chase, and absurdities were the hurdles. first of these was to experiment upon carbonic l; so they put a plant into pure carbonic l, and the plant died; but then Saussure shown that oxygen is necessary to be mixed carbonic acid before it can be absorbed by plant; so the next philosopher jumped over hurdle where it was a little lower, and mixed ut five parts of oxygen with the carbonic , and yet the plant died. Then they shook r heads in triumph at those who believed in al nutrition, and off again went they in their er of error. But what was this boasted riment worth? If I find a man benumbed cold, and bring him into a room where a e fire diffuses its grateful warmth, and see numbing effects of the cold yield to the rays eat from the fire, have I not a right to say warmth is favourable to animal life? "Oh!" my opponent, "I can soon test the truth our theory;" and he lifts up the benumbed , and puts him actually upon the top of the ing fire, where he is soon reduced to ashes; then he turns to me and says, "are you still pinion that heat is favourable to life?"—the riment with carbonic acid is quite as ab- l. The allegation is not that plants can ist wholly on carbonic acid, if the other litions for nutrition are absent; for Saussure shown, that, as long as the amount of nic acid is not more than one-twelfth the ant of the air, plants flourish with greater riance than in common air; but if it be sed beyond that quantity, it is positively rious. But once jump over such a high le of absurdity as that just described, and phantom-chasing philosophers find all the rest easy. Plants, according to them, live upon a complex food, such as animals do. This food is a black substance, which they have dignified under the various titles of humus, humin, humic acid, ulmin, ulmic acid, gein, geic acid, crenic acid, apocrenic acid, nitrophlorotenic acid, &c. &c. This black substance dissolves in alkalies, in lime, or in ammonia; and, when thus dissolved, enters the plant, and supplies it with carbon. Now, say the advocates of this mode of nutrition, "All fertile soils contain abundance of this humus. Vegetable mould is in fact this humus, and the rich soils of America contain little else; every rich soil, to which we can point, contains abundance of it." "Admitted," say we, who advocate the opposite theory. "Well, how is your humus formed?" "By the decay of plants, of course—the oxygen of the air acts upon the vegetable matter, and leaves this brown mass, consisting principally of carbon, as the result of the combustion." Then we ask—if this humus be the result of the decay of vegetables alone, how did the first plants in the world obtain their carbon, for humus could not then have existed? "Oh!" said an eminent humus-loving chemist to me, the other day, in London, "that is the question of the egg before the hen, or the hen before the egg: we cannot reason on primeval phenomena." "But," I replied, "it is an every-day phenomenon: islands arise from the sea, and are covered with vegetation, under circumstances where humus never could have existed; lichens grow on the walls of our houses and on desert rocks, where humus has never been; we can grow plants in burnt sand by making an artificial soil, and the plants thrive and fructify: immense crops are every year taken off meadows manured with ashes, with gypsum, or with guano, without any humus ever being added, and yet fertility is not impaired: clayey lands grow larger crops after paring and burning, when all the humus must be burned out. Where, then, the necessity for this humus to supply carbon? The immense marine forests of giant Seaweed, described by Darwin in his voyage in the Beagle, the stems of some of which, according to Cook, are above 360 feet in length, grow in the sea, where certainly there is no humus, and yet they reach a length unattainable by any terrestrial plant. There are whole forests which grow on sands utterly destitute of humus; and the waxy trees of the tropics adhere to the most arid and parched-up soils. The forests of the western continent, we are told by Saussure, contain such an amount of carbon, that it is impossible it could have been derived from the soil. Considerations such as these, by allowing Nature to speak for herself, are to my mind a hundred times more convincing than the attempts to crush great Nature into a glass vessel, and then misinterpret her language as the plain expression of opinion, although it is often that of astonishment at being treated so rudely. But let us ask this simple question of nature—Does she contain in her soils this humic acid of chemists? Such a substance is certainly known in the chemist's laboratory; but it is obtained by a process which never can be adopted by Nature in her own laboratory. If the humus be the nutritious matter of plants, it must undoubtedly reach them in solution in water; for it has been shown by experiment that the spongioles of the roots are unable to take up the finest powder, if it be merely in suspension in water. Now, if you treat good garden mould with water it remains perfectly colourless, taking up some earthy matter, and a mere trace, if trace indeed there be, of vegetable matter. Our spring and our river water, both of which are formed by the rains which permeate the soil, ought to be coloured black if the humus be soluble in water; but we well know that they contain mere traces of organic impurities. The stalactites found in caves and cellars are formed by the passage of rain through a vegetable soil, containing carbonic acid, which enables it to dissolve the lime-stone which it meets in its course; and, if the humus is in reality soluble in lime, we ought to find abundance of humate of lime in stalactites; but we do not. Then, if humus be not soluble in water, it cannot gain admission into plants. "But," say the advocates of humus '‘ although our material is not soluble in water, is so in water containing lime or ammonia." Yes; it is in the laboratory, when strong solutions of these substances are boiled with garden mould; but Nature does not shower down hot water saturated with alkalies.

Liebig has calculated how much carbon plants could receive, supposing all the rain that fell to pass through their organism saturated with humate of lime—an extreme, in fact, an impossible case—and yet, admitting its possibility, the crop growing on an English acre could not receive more than 700 lbs. of humic acid, which would not be equivalent to the carbon existing on the roots and leaves alone, allowing nothing for the stem. But Mulder, a chemist of great eminence and acknowledged accuracy, has just published some experiments in favour of the use of humic acid in nutrition. There are eleven experiments with humic acid, four of which only succeeded. In two of these, in which he had ulmic acid, or black matter alone, the plants grew exceedingly indifferent—not much better than in ordinary sand and ashes; but in the two in which humate of ammonia was used, the plants grew luxuriantly. But I would say, that these grew on account of the ammonia. The experiments conducted with sand and ash were not fair, inasmuch as that was not a f condition for plants to grow in. I d not de that humus, or vegetable mould, is favoura to vegetation: on the contrary, I recognise importance. All I argued for is, that it do not act *quasi* humus, but that its action consi in being a stored-up magazine for carbonic aci to be absorbed by the plants. Saussure show that, when vegetable mould is exposed to t air, it absorbs oxygen, and becomes carbo acid. It is by being a source of carbonic a that humus is favourable to vegetation. Th is a much more plausible view than the i that it is directly absorbed into plants humus. Since I first mentioned, in 1840, th charcoal increases the growth and colour plants, the experiment has been tried; and in deed it is greatly used by gardeners all over t country. The charcoal does not act by gi one atom of its own to the plant, but by abso ing carbonic acid from the air. Now, a with me that the action of humus is due to th

of carbonic acid, and the exhalation
s by plants in the dark ceases to be a
The water of plants absorbs it during
s well as during the night; but, being
by the sap into the leaves, it is there
ed by the agency of the solar light, its
assimilated, and its oxygen evolved.
ght the carbonic acid, entering by the
arried up into the leaves, where it now
meets with the sun, and is therefore
l along with the water. This exhala-
rbonic acid at night is a mere me-
and not a vital action, and has not
distant analogy to the expiration of

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AGRICULTURAL SOCIETY OF ENGLAND.

Y Council was held at the Society's
Ianover-square, on the 19th ult.

ic *among Cattle.*—The Duke of Rich-
nsmitted to the Council the reply,
y his Grace from the Board of Trade,
e to the application he had made, as
of the Society, to H. M.'s Govern-
pursuance of the resolution of the
t their last monthly meeting, to the
the subject is under the consideration
ajesty's Government; and that the
he Treasury will communicate to the
gricultural Society any information
y reach them in reply to the instruc-
h have been sent to Her Majesty's
at several Foreign Courts.

Grasses.—Mr. J. H. Grieve favoured
il with a communication as to a spe-
ss strongly resembling the specimens
Grass laid before the Council on a
ccasion. The Grass alluded to seems
itself to low swampy spots, and where
s evidently impregnated with salt.
ntains a variety of grasses, as well as
ts, that are, I believe, almost unknown
ld at large; and, amongst others, the
stands highest in the estimation of
s, and which has been observed to be
able to the different animals, at the
evincing the most nourishing qualities, is that which the Mexicans have named Musquite Grass. There are said to be three descriptions of Musquite Grass, of which only two have come under the writer's notice; the one is of a diminutive and silky nature, and the other of a more vigorous, but at the same time of a coarse growth. The conformation of the seed of the first description offers an almost insurmountable obstacle to its ever becoming a cultivated plant. Its form is that of a cylinder, of about half an inch long, and $\frac{1}{72}$ of an inch in diameter, firmly adhering to an awn of nearly the same thickness, and of an inch in length, which is furnished at the end with three collateral awns or branches. This appendage being of a tough nature, it is easy to conceive the difficulty there would be in equally disentangling and distributing so light a seed. The second or coarse grass bears an oat-shaped seed, containing a considerable portion of farinaceous matter, and is also furnished with a spiral awn, of a thick and fragile nature, and susceptible of being detached from the seed. This grass grows with a thick sward, and rises to the height of about 2 feet. The German emigrants cut it for hay. In the extensive prairies where those grasses are to be found, they almost exclude all other growth; and the numbers of cattle and wild horses that range upon them, and their sleek skins and fine condition, bear ample testimony to the nutritive qualities of the pasture. It may also be observed, that even the deer were fatter, and offered a richer venison than those in the eastern districts of Texas.

In reply to enquiries made of Mr. Grieve by the Chairman, after the reading of this communication, he stated, that the temperature of Texas ranged in winter from 35° to 50° of Fahrenheit, and in summer from 75° to 95°; that the soils of that country on which the grasses referred to, where found most luxuriant, were either a good black alluvial soil termed "mulatto," or the red loam; that the grasses preferred low grounds in tracts of land at an elevation of 200 or 300 feet above the level of the sea.

Sea-mud.—Captain F. D. Watkins, late of the Bombay Artillery, communicated a paper to the Society on the subject of sea-mud as a fertiliser, in which he urged the use of sea-mud on the Southern Coasts.

Potato Disease.—Mr. Colman, Agricultural Commissioner from the State of Massachusetts, favoured the Council with a communication he had just received from the United States, in which it is stated that lime, common salt, and various other salts (as arseniate of soda, &c.,) were complete remedies for a fungus disease in potatoes.

Italian Rye-Grass.—Mr. Rodwell, of Alderton Hall, near Woodbridge, Suffolk, presented to the Council a specimen of the growth of his "brown," or dark-coloured Italian Rye-grass, along with a bag containing 10lbs. of the seed, for distribution among those members who felt an interest in the cultivation of that variety of the grass in question. Mr. Rodwell called the attention of the Council to the statement he had communicated in the Society's Journal (Vol. v. page 284,) of the superiority of the dark over the light-coloured variety of Italian Rye-grass. He had found, from the experience of every successive year, not only the usefulness and productive qualities of the Italian Rye-grass in general, beyond those of any other Rye-grass with which he had been able to compare it; but that, as a preparation for wheat or any other successive crop, its properties were not liable to the objections that had been so unjustly made against it. Hitherto, Mr. Rodwell observed, no other kind of Italian Rye-grass had been considered genuine, but that which in its growth was pale-coloured, upright in its stem, and the produce of seeds with long awns, or tails: he was, however, furnished with indisputable proofs that such characteristics were not descriptive of the best kind of Italian Rye-grass. He had found that the most productive and most nutritive plant was that which had a fibrous root, producing a dark-coloured spreading stem, the result of seed which had a short awn, or tail. He had arrived at that conviction, from very close attention to the growth and application of the grass in question, during three years, and against his strong predilections, fostered as they had been by the public taste, in favour of the light-coloured and long-av variety, which had uniformly been consid the only genuine stock, and consequentl only marketable commodity in every market in England. Having observed in growth of his crop, reported in the Journa 1841 (Vol ii. page 214,) some plants that as he supposed not genuine, that is, not o pale colour or producing seed with long he determined upon a fresh importation of direct from Italy, and from this he had enabled to test the properties of the tw rieties, both of which he had since culti with great care and attention. He was convinced, from every comparison he had not only of the different kinds of plants i ferent fields, but of both kinds in the fields, that the best grass, namely, that is the most productive and the most nut for all cattle, is the plant which *spreads* the ground, is *dark*-coloured, and produc with *short* awn or tail: a conclusion conf by testing the two varieties, both in weig bulk, and finding as a result that the coloured plants from the seed of the awned grass exceeded in both those poin pale coloured plants by more than 30 per He had found, that whether intended as a nial or perennial grass, the dark-coloure much preferable to the pale-coloured vari the former branching and becoming th while the latter spindled up and became t in plant every succeeding year. The foll results were furnished to Mr. Rodwell farm-bailiff. He selected ten plants or roots of each variety in each of two di fields, and obtained by weight the foll comparison:—

	1st field lbs.	oz.
Ten plants of the pale grass (pulled and dirt beaten out of roots)......	0	14
Ten plants of the brown grass, (do).	1	4
Pale grass (roots cut off just above ground)........................	0	10
Brown grass (do.)...................	0	14

The bailiff (Mr. Scotchmer) remarks: pale grass is produced by the seed with tail: the seed of the brown grass has but short tail, and is much the heaviest se did for some time advocate the pale gra

I am brought by experience to become an advocate for the brown, which everything tells me is quite superior. First, I believe that 1 peck of the brown grass, sown on 1 acre, will produce a bottom equal to 3 pecks of the pale grass;—secondly, in point of quality the cattle will soon decide that, for feed what kind of cattle you choose with it, they will very carefully select the brown from the pale, whether green or in hay; if in hay, the pale is so very coarse that they will select the brown from it; and if fed on the layer green, the pale is always the last that is eaten: thirdly—and what I think is of great importance—I am persuaded the brown is the best preparation for wheat, on account of its not growing in such large, rough, hollow bunches. The pale, by growing all in bunches, never forms on the face of the land (what we call) a tough flag; while the brown, on the contrary, by spreading on the surface, forms a face equal, if not superior to any grass I have ever seen: and I quite believe—in fact, I am quite sure—that sow what quantity you will of the pale grass, you cannot get a good bottom without some of the brown with it. There is sufficient evidence in our layers themselves to confirm what I have said on the two points,—namely, of the cattle eating them where we have fed, and likewise of the beautiful bottom which the brown grass forms, both where we have fed and where we have not fed."—The Council ordered their best thanks to be returned to Mr. Rodwell for the letter, specimen, and supply with which he had favoured the Society.

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GREAT BUDWORTH AGRICULTURAL SOCIETY.—A special general meeting of the subscribers to this society was held in the School Room, on the 13th ult., to take into consideration the propriety of selling cheese by the legal cwt. of 112 lbs., instead of any other weight. Major Townshend was unanimously appointed chairman. After a full consideration of the subject it was allowed to be prejudicial to the interest of the Cheshire farmers to sell by any other than the legal weight, and a resolution was numerously signed, binding themselves, and recommending all similar societies to adhere to it.

REARING CALVES.—The following is the way in which the best Gloucestershire dairy farmers manage:—The calf is removed from the cow at 8 days old, provided the dam be a cow and not a heifer; if a heifer, the calf is allowed to remain about a fortnight, because a heifer is more difficult to be milked, and the calf assists the milker. No difference is made whether the calf be heifer or bull—they are all reared exactly in the same way. At about a week old, calves are allowed each 2 quarts of best milk twice per day. This is all that is given till two months old, except hay, which they generally eat at a very early age, say 3 weeks. After 2 months old they take much hay, and then the milk is reduced to 1 quart, and add two quarts of water. At about 10 weeks old they are turned out to grass, and the milk is gradually discontinued. The longer a calf remains with its mother, the more will it feel the loss when taken away. The age of 16 months is the correct time to put the heifer to the bull.

MANGOLD WURZEL AND SALT.—My crop of Mangold Wurzel, in the autumn of 1843, was magnificent; more especially on two-thirds of the field which adjoined a small coppice-wood; which, having been cut during the previous winter, gave life and vigour to all the weeds that had been kept under during the previous ten years. And this part of the field was, consequently, covered with common groundsel, which, during the wet spring and fine summer, sprang up and flourished surpassingly thick, covering every space between the drills. I ordered my old friend and assistant, common salt, to be strewed over the groundsel and between the drills, following the hoes, which were at work upon this weed. The result was, their total destruction. The quantity of salt applied was much more than I intended, and I apprehended injury to the Wurzel; they were, however, far advanced in size. But so far from suffering they increased immensely. The crop—upwards of 100 tons. The field is 1¼ of an acre. Wheat followed—an excellent crop. Then Turnips after a ploughing; which are, at this moment, flourishing. From the moment the Turnips came up the part of the field salted, has been most conspicuously superior to that not salted; so much so as to be visible from the opposite side of the valley.—*W.*

Flax Seed as Food for Riding Horses.—A surgeon at Liverpool has kept his saddle-horse for the last 12 weeks on 7lbs. of linseed, 10lbs. of bran, 10lbs. of hay, and 120lbs. of wheat-straw, per week, including the litter. The linseed is ground and boiled, ½lb. to a gallon of water, with a little salt; it is then poured on cut chaff of hay and straw, mixed with the proportion of bran. The horse is in excellent condition, with a good coat, notwithstanding much exposure to the severe weather. The total cost is only 5s. 9d. per week, reckoning the linseed at 28s. per cwt., hay at £6, and straw at £2 16s. per ton.

The Importation of Cattle.—A return has ben printed of the number of oxen and bulls, cows, calves, sheep, lambs, swine, and hogs, imported into the United Kingdom since the 5th and 6th Victoria, c. 47, anno 1842, specifying the total quantities in each year ending the 5th day of January. In 1842-3, there were imported of oxen and bulls, 3,156; cows, 1,038; calves, 70; sheep, 634; lambs, 10; swine and hogs, 410. In 1843-4, the numbers were respectfully—1,114; 368; 39; 210: 7; 361. In 1844-5, —3,710; 1,155; 55; 2,801; 16; 271. Total of the importations from the passing of Act (July 9, 1842) to January 5, 1845—7,980; 2,561; 164; 3,645; 33; 1,042.

Fruit Trees.—As a remedy for blight, and insects attacking fruit and other trees, I beg to offer the following:—Dissolve 1lb. of soda in a gallon of rain-water; shake *this up* in a bottle with a pint of spirits of *turpentine,* when they will amalgamate; then, by adding more water, make up the quantity to 10 gallons. It should be applied with an engine having a fine rose.—*G. L. S.*

Reviews, &c.

The Roots of Plants, &c. By J. M'Arthur, Randalstown. London: J. Ridgway.

The structural economy of vegetation is, at the present day, admittedly, a very important branch of agricultural research. The natural philosopher has already pointed out the functions of the beautiful organism of plants as displayed in the roots, stem and leaves, and practice is every day supporting and strengthening the theory of these functions. Mr. M'Arthur, in the little work before us, goes far, as a practical man, to reconcile some of the minor differences which yet remain between theory and practice, so far as the roots of the several agricultural plants are concerned. By a close and careful investigation of the growth of the various plants of agriculture in different soils, and under different modes of cultivation, he arrives at conclusions which in most cases correspond exactly with what is advanced by natural philosophers on these subjects, or in other words, he finds that take place in practice which in theory we are told will take place. In illustration of this we have marked for extract a passage which our author entitles "*Subsoils contain the food of plants,*" and in which he corroborates the views of Prof. Johnston on this subject:—

> "There is, I am aware, much prejudice respecting the composition of subsoils—the prevailing opinions being, that they are anti-vegetative, and that it is injurious to throw them on the surface, and the general practice is to avoid touching them with plough or spade. The consequences are, the surface, by continued labour, becomes exhausted, and the subsoil receives and retains much fertilising matter that lies nearly unappropriated and useless, and that, under proper cultivation, would tend to produce luxuriant crops, whilst the usual cry is, 'The land is the poorest in the country.' I refer not to isolated cases, or subsoils partially existing in particular localities; but *I* believe a

ubsoil that is really anti-vegetative, and conains no food for plants, is rarely to be found. Not to be misunderstood, I qualify this opinion by stating that subsoils, like surface soils, are ery variable in composition, and, of course, in he matters which impart fertility or tend to arrenness; and that, in proportion to their omposition, freedom may be used, or caution ecessary, in throwing up subsoils on the surce. What I wish to impress on all is, that here is more danger in avoiding subsoils than n turning them up or gradually raising them o the surface; and, as I shall point out, *the oots of agricultural plants afford ample means f ascertaining, sufficiently near for all practical urposes*, whether subsoils may be so turned up.

"Chemistry, by analysis of soils; and science, y deductions and reasonings, point out the eans of obtaining similar information.

"To science I shall first refer.

"Professor Johnson, in his 'Agricultural hemistry and Geology,' page 103, says—

"'There are certain substances contained in very soil which gradually make their way own towards the subsoil. They sink till they each, at least, that point beyond which the ough does not usually penetrate.'

"He then enumerates certain substances, hich are thus carried down—'Lime, marl, c.'—and proceeds:—

"'If this be the case with earthy substances hich are insoluble in water, it will be readily elieved that those saline ingredients of the soil hich are easily soluble will be still sooner ashed out of the upper and conveyed to the nder soil. Thus the subsoil may gradually ecome rich in those substances of which the urface soil has been robbed. Bring up a porion of this subsoil by deep ploughing, and you estore to the land a portion of what it has lost —substances, perhaps, which may render it much more fruitful than before.

"'In Germany theory has pointed out the growing of an occasional deep-rooted crop to ffect the same end. The deep roots bring up gain to the surface the substances which had aturally sunk.'

"In page 110 he says—

"'The second or third crop of *lucerne* was ploughed in by the Romans, as it still is by the modern Italians. In Tuscany, the *white lupin* is ploughed in; in Germany, *borage;* and in Holstein, spurry. In French Flanders, two rops of *clover* are cut, and the third is ploughed in. In some parts of the United States the lover is never cut, but is ploughed in as the nly manure. In Sussex and parts of Scotland, *urnip* seed has been sown at the end of harvest nd after two months again ploughed in, with reat benefit to the land. That the soil should become richer in vegetable matter by this burial of a crop than it was before the seed of that crop was sown, and should be also otherwise benefitted, will be understood by recollecting (see p. 27) that, perhaps, three-fourths of the whole organic matter we bury has been derived from the air.'

"This latter extract may seem not to refer to 'subsoils,' or to bear on the question of their fertility, but to peculiar means of improving the soils generally. Even as such, they are worthy of record and of particular attention; but they also bear strongly on the subsoil question, as several of the crops which he enumerates are *deep-rooted*, and, as he says, 'the deep roots bring up again to the surface the substances which had naturally sunk,' and, as I add, which may have been naturally contained in the subsoil.

"So much for scientific proofs of the existence of fertilising matter in subsoils. Many others might be adduced; but these being, in my opinion, sufficient, I turn to my favourite authority—*Nature*—as displayed by the roots of plants. For what purpose do the roots of beans, flax, and clover, penetrate so deeply into the subsoil? Why are they impelled by Nature to grow into that soil which almost every farmer is afraid to touch with the plough or spade, much less to throw on the surface?

"In recently reclaimed bog I have found tap or deep-rooted plants, on growing through the improved surface to the cold unbroken peat, in place of growing into it, turn and grow along between it and the surface, and being, when pulled, of the form of a J. In one instance I found a parsnip with the top growing straight up, and the root along the surface, the top and root being at right angles. The inference is, that the roots followed the food. The antiseptic quality of the natural peat was ungenial, and the plants were forced to diverge from Nature's course, and follow the food lying in the surface. In the same bog, on a portion finely pulverised, I found turnip roots to have grown upwards of four feet along the surface, and upwards of two straight down. Turnip roots grow principally in the surface; hence it is evident in this instance they followed the food; and the conclusion is, that deep-rooted plants penetrate the subsoil for one purpose only—in search of nutriment.

"I direct particular attention to the flax crop on Gallagh reclaimed bog. As I have stated, it rests on a *red till*, a description *very general*, and that prevailing to a large extent, is considered and admitted, nearly by all, to be 'the worst in the country.' Yet the flax was excellent, being nearly double the length of ordinary crops. Its luxuriance, I believe, partly arose from the peculiar season, combined with a peculiarity attending this class of soils. This I shall endeavour to elucidate. Clay soils are known to contract and expand very much under the vicissitudes of weather. Breaks and fissures of irregular formation appear in dry weather, and are proportioned to the extent of drought. When rain sets in, they absorb moisture, and gradually expand to their natural bulk (but not to their natural state.) as the rains continue. Thus, with heat and with rain, there is a continued motion of the crust of clay lands. But, when such land is cultivated, and manure applied, after a period of drought, when rain sets in, many of the soluble and insoluble materials of the manure, and of the improved surface, are washed into the fissures to which I have referred. This occurs as the rains fall, and before the soil has absorbed sufficient to cause expansoin to its natural bulk. The matters thus washed down combine with the subsoil, part being absorbed, and part lodging merely in the crevices, on which, as the clay expands, it closes. It is thus I infer, that soils on expansion return *not* to their natural state, containing as they do the manures which are very erroneously supposed to have been appropriated by the crops. In tracing out the roots of plants, I have almost invariably found them growing through such fissures, and more especially in the subsoil of Gallagh reclaimed bog. The flax referred to was nearly the only *deep-rooted* crop that had been grown on it, and hence I conclude the subsoil contained a superabundance of food, which, in the words of Liebig, "was not returned to the soil, but was employed in the formation of new fibres, and new organs, or mouths and stomachs, for conveying food to plants," and thus the extraordinary prolificness of this crop is accounted for. This is sufficient evidence of subsoils containing the food of plants derived, as may be said, from artificial sources, combined with *natural* effects, such as those just described; so that, supposing subsoils to be naturally barren, which in general I do not admit, the operations of the farmer (although unintentionally unknown to him) tend to fertilise them.

"And thus many lands are considered barren or poor, that contain the sources of fertility, totally lost under a pernicious system of bad farming, combining principally too shallow ploughing, and neglecting a proper rotation of crops which should always include deep-rooted plants."

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The Journal of the Royal Agricultural Society of England. Vol. V., part II. J. Murray, London.

We pass over the extremely interesting paper of Mr. B. Almack "*On the Agriculture of Norfolk,*" because no short extract from it can possibly give an adequate idea of its merits, and because it is just possible that Mr. A. may think proper to publish it in a separate form, as is now very frequently done, and to make long extracts would neither suit our columns nor Mr. Almack's wishes should such be his intention. We will revert to it, however, on a future occasion, should we find the writer decline separate publication.

We pass over, too, "*The report of the Trial of Implements at Southampton,*" by Mr Parkes, to make room for the following extract from Mr. Miles' "*Report of Experiments with Artificial Manures.*" To these manures the farmer, resident at a distance from any town, must more or less have recourse, if he intends to cultivate his land so as to obtain from it all he can and ought to get. Their cost in some cases so little, and the advantage of their application so great, we should be sadly wanting in duty to our readers, many of whom are doubtless afraid of making experiments themselves, if we did not upon every opportunity set before them the results of the experiments made by others, when we are under the conviction that the results of such experiments are fairly given, and have the appearance of being carefully noted. Of such sort certainly appears the paper of Mr. M. who says:—

"The results of these experiments I venture to lay before the public; but from the peculiarity of the present season, beg particular attention to the previous treatment of the land on which these experiments were tried, as it is necessary to consider how much of the productiveness of the wheat was attributable to the effect of the manures, and what to the greater depth of soil obtained by subsoil ploughing. This is a preliminary suggestion which I think it right to make, as it is not my intention to reason upon the results, sufficiently satisfactory in a pecuniary light to myself, but to leave the scientific or practical man to draw his own inferences from the facts now submitted. The field was a good loamy soil. In the year 1841, preparatory to the wheat crop, 10 bushels of bones had been sown on the clover-ley previously to ploughing. In the year 1842, after the wheat crop had been harvested, the subsoil plough was used, and the land stirred to the depth of 14 inches: such was its condition when, after having got it into good turnip tilth, and having accurately marked out 6 acres, to

"No. I. was applied 40 bushels of Daniel's manure marked B, sown broadcast and ploughed in previously to ridging up, in addition to which 12 bushels marked A were drilled in before the ed, so as not to come in immediate contact ith it.

"No. II., 10 tons of farm yard dung, mixed ith 30 bushels of Daniel's B manure one onth before using.

"No. III., 20 tons of farm-yard dung.

"No. IV., 20 bushels half-inch bones, drilled before the seed.

"No. V., 3 cwt. of guano, mixed with 15 shels of screened Newport coal-ashes, and lled in before the seed.

"No. VI., Stott's salts, 2½ bushels, mixed th 11 bushels of screened Newport coal-ashes d drilled in before the seed.

"Skriving improved Swede was the seed illed in on the 18th of May: the plants came well, and during their growth were not afcted by fly or any other disease; they were lled, topped, tailed, and weighed on the first December. The ground was soon after oughed, and on the 24th of February Bellevue alavera wheat was drilled in, which came up ry well. On the 27th of April I find by a te that the wire worm attacked the wheats in os. 4, 5, and 6, more than in any other part the field; but still, thanks to the rooks and avy rolling, plenty of plant was left. The heat, until it came into ear, notwithstanding he drought, which in this part of the country as uninterrupted, looked admirably. When wever it had attained that condition it fell way, and apparently withered from sheer lack moisture; nor did I conceive that it would erage above 18 bushels per acre. It was cut with scythes on the 10th of August, and was housed on the 20th. The rent paid for the land, tithe free, is 50s. per acre.

Mr. M. gives the results of these experiments in a table from which it appears that No. I at a cost of £1 19s p. acre for manure gave 15 t. 8 cwt. of turnips p. acre in 1843, and in 1844, 39 bush. 2 pks. of wheat per acre; the total value of the two crops being £18 15s. per acre.—No. II, at a cost of £3 10s. per acre for manure, gave 19 tons. 18 cwt. of turnips in 1843, and 40 bus. 3 p. of wheat per acre in 1844; total value of the two crops, £21 17s. 6d. per acre.—No. III, at a cost of £5. per acre for manure, gave 21 tons turnips in 1843, and in 1844, 33 bush. of wheat per acre; total value of two crops £19 16s. 3d.—No. IV, at a cost of £2 15s. for manure, produced 8tons 4cwt of turnips in 1843, and 34 bush. of wheat per acre in 1844; total value of two crops £18 15s. 9d.—No. V, at a cost for manure of £2 2s. 6d. per acre, gave per acre of turnips in 1843, 22 tons. 18 cwt., and of wheat in 1844, 36 bush. 2 p.; total value of crops, £21 14s. 6d.—No. VI, at a cost of £1 16s. 4d. per acre for manure, gave 17 tons. 12 cwt. of turnips in 1843, and 33 bush. 3 pecks of wheat in 1844; the gross value of the crops for these years being £18 7s.

Mr. M. proceeds—

"The effect of these different manures upon the growth of turnips, taking the greatest and smallest produce, and comparing them, is this:

No.		Tons.	Cwt.		No.
5	produced........	7	10	more than	1
3	,, ...	5	12	,, ...	1
2	,, ...	4	10	,, ...	1
4	,, ...	2	16	,, ...	1
6	,, ...	2	4	,, ...	1

"The relative efficiency of the manures, however, undergoes a most extraordinary change as far as the growth of wheat is concerned; for adding the head and tail corn together produced on each acre, and testing their relative produce as we did the last, we find the following to be the result:—

No.		Bush.	Pecks.		No.
2	produced........	7	2	more than	3
1	,, ...	6	2	,, ...	3
5	,, ...	3	2	,, ...	3
4	,, ...	1	0	,, ...	3
6	,, ...	0	3	,, ...	3

"Now, after guano, which upon the two crops gives the greatest profit to the farmer, it will be observed that the mixture of dung and Daniel's manure stands second. I had never given this compost previously a fair trial, but had in various ways, and with different quantities, unsuccessfully applied Daniel's manure by itself.

"The result however of this experiment, conducted for two years, leads me to infer that this manure, when properly mixed with farm-yard dung, will be most advantageous, saving much expense in leading, and giving at any rate an equal profit—in this case a considerably larger one than would be derived to the farmer by the application of double the quantity of dung unmixed; and indeed in this view I am corroborated by a communication made by Sir Wm. Heathcote, and published in our last number, of experiments instituted by him on the wheat crop of 1843 with different kinds of manure, in which I find that a mixture of 10 tons of dung and 25 bushels of Daniel's B manure yielded the greatest quantity of wheat, next to a mixture of dung and guano. The trial was made with nine different manures—dung and guano producing 35½ bushels, and dung and Daniel 35 bushels per acre. And although Mr Fowlie, Sir W. Heathcote's bailiff, is not willing to admit that Daniel's manure was of any use in contributing to this growth, attributing the production to the use of the dung; yet, where dung was applied alone, precisely in the same quantities as was used by me, 32½ bushels was the crop. Mr Fowlie likewise states, 'that although dung has in this instance been secondary, he was inclined to believe that this was entirely owing to the season, the wet May and June having caused the wheat to be too luxuriant;' whilst I, if tempted to make a remark upon the failure of dung in my experiment, should infallibly ascribe it to the dryness of the season and to the heating qualities of the dung still remaining in the soil, from the application of a large quantity.

"Of the efficiency of guano nothing need be said—this is but one of the very numerous instances in which its use has been proved most *beneficial*, and such as to justify the immense importation now taking place for farming purposes. I had never, however, previously tested its effects the second year.

"The Swede turnips, which were all carri
from the land, I have valued at 10s. a ton; th
wheat at what I sold it for, viz., 5s. 9d. pe
bushel; the tail at 4s. per bushel. I have s
no value whatever on the straw."

◆

Cheshire Farming. A Report on the Ag
culture of Cheshire, to which the Pri
the Royal Agricultural Society of Eng
was awarded. By William Palin. L
don, Simpkin and Marshall: Ches
Seacome and Prichard.

CHESHIRE, from its acreable extent,
excellence of its staple product—che
and its contiguity to the manufactu
districts of Lancashire and Stafford
as well as from its containing a consid
ble manufacturing population of its o
and last, though not least, from its b
possessed exclusively of rich salt mi
has been, and will continue to be, fore
amongst the English counties in the c
sideration, as well of the capitalist se
investment, as of the statesman se
information on the subject of the int
resources of the kingdom. To the far
unless indeed bred to the peculiar m
operandi of the county, the retentive s
born clays which prevail over three-fo
of its surface offer but little inducem
unless indeed he have the spirit of impr
ment so strong upon him, that to con
the difficulties of nature constitutes
delight, when certainly this county o
an almost inexhaustible field for his en
prise. The men "to the manner bo
the native farmers of Cheshire, are de
indebted, as indeed is the agricultural p
lic generally, to Mr. Palin, for the car
appears to have bestowed upon this
Whilst he has with a modesty truly bec
ing a member of that body, defended
Cheshire farmers against the freq
charges of a want of energy and skill,
has, with a perfect degree of candour,

ted, though not in express terms, that ividual instances may be found to justify h remarks; thus, after answering the stions propounded by the society, he erves :—

> In concluding my Report I may remark, any attempt to have given an accurate ription of every course or "no course" em of management, pursued throughout part of England, would have been an almost ess task, and could not possibly lead to any ficial results. There is in Cheshire, as in y other county, a mixture of good and bad ing; and while the agriculturists of this ict make no pretensions to the palm of liar merit, they cannot admit the imputa- of being the "very worst farmers" in the dom; and they justly think the epithets ergetic and unskilful are not generally icable. In almost every district there are e or less difficult soils to contend with; and ystems which are pursued in the Lothians, folk, and other counties of England, would be at all suitable to the generality of land in shire. Enough, I trust, has been advanced ow that, in many respects the agriculture e county has been improved; and I doubt that a majority of the farmers are desirous roceeding with improvements as far as in r power: but something more than even gy and skill on the part of the tenants is ntial to good farming; and there never was riod when they stood more in need of assis- e and encouragement than the present."

his is just as it should be. With refer- e to the bad farming which Mr. Palin is strained to admit exists in the county, l its cause, which he has not ventured enquire into, we may ourselves be per- tted to offer a remark. Mr. Palin must ow right well, at least if he does not we ve occasion to know it, that there are ongst the Cheshire farmers men so full prejudice that they with difficulty believe ir own eyes; too often we admit blinded those very prejudices, and by a certain f-satisfaction, which, whilst obtaining m their soils about half what by energy d skill they ought to obtain, leads them refuse all opportunities by mutual in- uction, through the means of clubs or icultural societies—men who, on being ited to join such institutions, wag their ds, and with a knowing wink proclaim that *they* can get good crops, and do not feel inclined to let others know how; and are, above all things, particularly jealous lest their landlords should by any means learn how extremely rich they are becoming, or to use their own wise words, "to make their landlords as wise as themselves," for which purpose, and for which purpose only, they believe farmers' clubs and agricultural societies were invented.

Now, if farmers' profits were really as great as we know they are not, there might possibly be a reason why *some* landlords should not know it, lest they should take advantage of the circumstance to raise their rents; but when it is so well known that even the best and most skilful farmers, having too the advantage of capital, can with difficulty "make both ends meet," and tie decently, surely the more the landlords know of the matter the better. It is, in our opinion, high time they did know, and would consider to what the present downward tendency of everything is leading, not their tenants only, but themselves. To our thinking, the landlords of England cannot know too much; and were such a subject fit matter for legislative interference we should be tempted to wish that every land-agent was by law compelled to become a practical farmer of at least 400 acres, and every large landowner himself the occupier of at least half that quantity. They would then discover, by the surest means, how much tenants really stand in need of a merciful consideration, and how small are the acreable profits from land upon the average of seasons and prices in this country.

We must not, however, lose sight of Mr. Palin, part of whose work was transferred to the columns of most of the agricultural papers except our own at the time of its publication in the Transactions of the Royal Agricultural Society. We thought then, as we think now, that where separate publication is intended, (and till the author disclaims such intention, it is fair to presume such publication will take place,) it is most unfair to pirate from the pages of the Society's Journal, in the wholesale way some do, the labours of individual authors.

That the work will be read eagerly, not only by Cheshire farmers generally, but by dairy farmers in most parts of the kingdom, we have no doubt; and of its merits, in a practical point of view, all will have the opportunity to judge. If it has a serious defect, it is, that the dairy system is not brought sufficiently before the reader, and treated in a more comprehensive manner. Mr. Palin has the means to correct many injudicious modes of management in the rearing, housing, and feeding of the stock: he can well point out how the buildings necessary for the care of the milk, and the manufacture of the cheese, should be arranged; and to these matters he ought, in our opinion, to have devoted a little more space. Upon the whole, however, we may safely pronounce the work a candid exposition of the Agriculture of Cheshire; and as such we heartily recommend it to our readers.

There was another essay upon this subject submitted to the Council of the Royal Society, but of it we have heard nothing.

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Observations on the Scotch Lease, &c. By J. Easton, Glasgow. (Second notice.)

We drew the attention of our readers in our last number to the pamphlet of Mr. Easton, from which we make the following extracts, giving the substance of a Scotch lease. It will be readily seen in what respects the Scotch and English leases differ. As to the leasing system itself, our outcry is not so much against the form of the English document, as against that absurd reluctance which many tenants have to accept a lease, and which still many more landlords have to grant one. It is quite clear to us, that all is not done on either side which would be effected were both bound by simple well arranged covenants, *to the fulfilment* of which they would remain subject to the end of the term, and even, on the part of the tenant, after it, if all he was bound to do on the expiration of his lease was not performed.

With these remarks we will present Mr, Easton to our readers, who observes—

> The lease proceeds upon the narrative of i being a contract between the proprietor of th lands, who is named and designated by his pr per title or addition as heritable proprietor, a his tenant, who is also carefully named a designated. The tenant is taken bound, a prohibited from subletting the said lands eit to legal or voluntary assignees.—The farm let is described as all and whole the farm a lands of D——, lying within the parish F——, and county of E——, all as presen occupied and possessed by ——; and that the space of 19 years and crops from and a the term of Martinmas, 1843, and to be pe ably possessed by him and his heirs during foresaid space.
>
> The proprietor reserves full power and lib to search for, work, raise, and carry off c marl, stone, limestone, coal, metals, and nerals of whatever description discovered, which should (during the currency of the le be discovered in the lands let, and to m levels, aqueducts, and others necessary for purpose—he being bound to indemnify tenant out of his rent for whatever damage ground shall sustain from these operations such damage to be ascertained by two men tually chosen.—The proprietor reserves lib to cut, manufacture, and carry off all wood growing timber, without being liable in p ment of surface damage or other recompen the tenant.—He also reserves liberty to m new roads, and alter old ones through the la for the improvement and conveniency of county, and to straighten marches with adj ing proprietors at pleasure, or to exchange ground for that purpose, the tenant recei ground for ground by such straightening marches, or, in the option of the propri an equivalent by deduction from the rent c responding to the said rent, and to the qua and quality of the ground so taken off, &c.
>
> The proprietor reserves full power and lib to make plantations on any part of the lands the extent of   acres, at any time during currency of the lease, the tenant being allo deduction from the rent for the ground so ta off.—He also reserves to himself, and oth having his authority, full power and liberty hunt, shoot, and kill game on the lands; b the liberty to hunt does not extend to coun on horseback over wheat or turnip fields, or th

entering of ground, where sheep are feeding, with dogs.—The proprietor reserves to himself, and others having his authority, full power to examine the lands let, houses, fences, ditches, drains, &c, at all times, to see that the stipulations come under by the tenant are all complied with; and, in the event of the tenant failing during the lease to keep the houses in good pair, the proprietor, after giving notice in riting, has power to repair the same at the ant's expence, and the latter is taken bound pay, along with the next term's rent, what- er sum the proprietor shall show he has ex- ded or laid out on that account, beneficially the houses and lands, as the same is in- acted by the discharged accounts of the per- s employed in making such repairs.

The tenant is taken bound to pay the rent ulated for and agreed upon, to the proprietor his factor, agent, or chamberlain, at two ms in the year, Martinmas and Whitsunday ome proprietors, however, make the rent pay- e at Candlemas, *i. e.* 2nd February, and mmas, 1st August,) by equal portions or in- lments, during the lease, with the fifth part re of the rent to liquidate expences or pe- ty, in case of failure in the punctual pay- nt, with the legal interest from the respec- e terms of payment till paid—but this pe- ty is seldom or never exacted.—He is taken und to reside constantly on the farm, and at times to put and have thereon a complete ck of horses and other bestial during the ole currency of the lease; and to labour, ma- re, and crop the lands according to the rules practice of the best husbandry, or that ctised in the county: but without prejudice the generality of this clause, a fixed rotation y be, and sometimes is inserted.—He is like- se taken bound, and prohibited during the se from disposing of or selling, either by blic auction or private bargain, any part of e produce of the farm, except butter, cheese, ultry, eggs, meal, potatoes, hay, cattle, and ain thrashed out, and excepting the fodder or raw of the last crop under the lease or his re- oval from the lands, and is bound to apply to e lands the whole dung or manure made ereon, and whatever dung or manure may be n the lands at the termination of the lease, be- ngs to the proprietor, without any value to be iven for the same.

The tenant is also taken bound to allow the oprietor, or incoming tenant, the last year of he lease to sow clover and grass seeds, with all r any part of the white crops, and properly to arrow in the seeds, and after reaping the crop, to reserve the growing grass from injury, and not cut or pasture the same with his cattle, &c.—e is likewise taken bound not to deteriorate, impoverish, or run out the lands, but restore them (should he do so,) at the expiration of the lease, in good heart and condition.—He is taken bound, if the proprietor has put all the houses, buildings, fences, &c., on the farm, in sufficient repair, and scoured and cleaned the ditches and drains properly, and all these being accepted of as such by the tenant, to leave them in the like good order and condition at his removal, ordinary wear and tear excepted.

The tenant is also taken bound, within so many months (generally six months) after his entry to the lands, to insure in offices approved of by the proprietor the whole houses and buildings erected or that should be erected on the lands for his conveniency, from all loss by fire, to the extent of the full value thereof, and also to insure in the same manner the whole, or as much of the crop and live stock as would be equivalent to one year's rent, and to pay the premium and duty of such insurance during the currency of the lease, and when required to assign to the proprietor the policy or policies of insurance, with power to recover the money to the extent of any damage that should be done to the houses, or of one year's rent due, or to become due; and in the event of the tenant neglecting so to insure, the proprietor shall be entitled to do so at the tenant's expense.—He is taken bound not to erect or carry on any distillery, or have any other work upon the lands, for which duties may become due to the public revenue, or any penalties be incurred, tending to endanger the proprietor's right of hypothec.

A clause is sometimes introduced to the following effect:—"That in the event of the tenant during the currency of the lease, becoming bankrupt in terms of law, or executing any voluntary trust, conveyance, or other deed, of his property for behoof of his creditors, or be otherwise truly unable to fulfil the obligations come under by him, and contained in the lease, in any of these cases the lease is declared to become *ipso facto*, void and null, as if the same had never been entered into, and all right and title to the said lands determine and be at an end, and the same declared to be forfeited to the proprietor accordingly."—The tenant is taken bound not to hunt, shoot, or kill game on the lands, or fish in the rivers adjoining them, and to do everything in his power to prevent his servants from doing so; and shall, so far as he can, prevent all persons not having the authority of the proprietor from shooting, hunting, and fishing, or trespassing on the lands; that he shall give information to the proprietor of all unauthorized persons so trespassing, with the names of the witnesses who can prove the offence, &c.

Mr. Easton urges upon the landlords of

England the propriety of granting leases for terms of sufficient duration to induce enterprising tenants, with skill and capital, to embark it in the improvement of the soil, in the following terms:—

The first progression towards improvement in agriculture in any country, must flow from landowners themselves, by giving every encouragement in their power to industrious and enterprising tenants, and granting to them such leases;—and the advantage will be equal both to proprietor and tenant; because the augmented value of an estate must emanate from improvement, the accomplishment of which demands the expenditure of both much time and property, and which no tenant-at-will can, or if he had it, would risk under such a slender and uncertain tenure. Hence the absolute necessity for landowners, if they desire to encourage improvement, as well as promote their own interest in the most effectual manner, is, in the first instance, to pave the way in setting aside and abolishing AT-WILL LEASES, and in their stead substitute leases of an endurance of at least from 15 to 21 years.

It is out of the question to suppose that a tenant of intelligence would invest capital in improving lands where the endurance is merely from year to year. It is incompatible with man's nature to continue in any labour or enterprise, unless he has the prospect of deriving some permanent benefit. Tenants, therefore, ought to have a surety that they will reap a proportionate compensation for their risk, which will thereby enable them to prosecute their business with energy and success, and this can only be done by landowners throwing aside all prejudice and granting leases to their tenants of such a duration as now mentioned, and in return they will unquestionably receive a fair equivalent for their lands, and, ultimately, a greatly increased rent-roll.

In confirmation of the benefits which land owners will unquestionably derive from granting leases to their tenants of the duration spoken of, I may just instance a case where a lease of a farm for 19 years was granted—this farm has been sub-let (with the proprietor's consent,) for the remaining SEVEN years to run, and for which the subtenant is to pay to the original tenant a bonus cash down of £565 at his entry. Now, supposing this property were sold at 27 year's purchase, which is the average rate in that part of the country where it is situated, and if the surplus rent or bonus be devided by 7, and the product multiplied by 27, it shows an augmentation in the value of the property, notwithstanding the general depreciation of agricultural produce, of no less a sum than £2,179 to the landowner, and at no greater expenditure to him since the commencement of the leas than £200. Such surely speak volumes in favour of leases.

I am convinced that if the landowners i England would calmly and deliberately take the question of leases into serious consideration, they could not but arrive at this conclusion, and approve of granting leases on an enduran similar to that followed in Scotland; and I venture to say that, unless that system adopted (or a better than their present on tenants will remain careless and negligent, consequently, instead of the soil being improv and the science of Agriculture advanced, opposite will assuredly be the issue.

I would simply ask, What could be gratifying to landowners than to see the soil their respective estates brought to the high degree of fertility, and carrying crops infinit more abundant than any hitherto seen, and this is easily accomplished and arrived Grant to tenants leases of a duration of at l from 15 to 21 years, and (if the lands are rack-rented) every source of fertility will searched after, every corner of ground will cultivated, and the value of land become gre

Horticulture, &c.

JERUSALEM ARTICHOKES.—Any well ground planted with small tubers will duce an excellent crop. If got up w ripe after Christmas, they will keep July or even later. The best way to k them is to earth them up like potatoes der the north side of a hedge or wall narrow ridge.

PEARS.—The Jean de Witte well ceeds the Glout Morceau, Passe Col and Winter Nelis, and thus fills up period between these and the Beurré, Beurré Rance, &c. The Jean Witte was raised by the late Dr. Van Mo of Louvain. Two distinct varieties first introduced to this country under above name, but both of them proved and comparatively worthless. Hence cultivation of the true sort, subseque obtained, is more limited than would otherwise been the case. The flesh yellowish-white, melting, buttery, and the flavour somewhat resembles that the Glout Morceau. Its season is gener from the middle of January till Mar The shoots are olive-brown, with rather hoary buds. Leaves middle- ovate. A good bearer as a standard; it will be found a most useful variety, to its period of ripening.—*R. T. in Gar. C*

i.—The following varieties are
the best:—Walcheren, Grange's
hite, Chappell's Cream-coloured
Protecting, Danish or Late Green.
-The following varieties will afford
throughout the season:—Early
Cormack's Prince Albert, Early
(if the preceding cannot be ob-
Auvergne, Knight's Dwarf Mar-
arf Imperial, Milford Marrow,
ussian, Groom's Superb Dwarf
ight's Tall Marrow.

The Markets.

ket for **Wheat** *has been slow to a*
ing the month, and what was really
expected at this period of the year, at
provincial markets, a decline had to
d to ; this may have, in some measure,
n the free deliveries which have taken
the growers. At the last London
vever, a trifling activity prevailed, the
English being small. Foreign is quo-
ztes of last month. Should no improve-
place previous to our next publication,
t down the figure as receding till close
st.

is a turn better for fine parcels, but
ts are not in request ; they command,
lly as much money as in our last. The
ry fall in the price of this article,
last seven weeks, is attributable solely
al of foreign grain, and a free de-
the growers.
are a shade better.
e on the decline ; the large arrivals at
h receiving ports have tended to effect
ne English mealing oats, as well as for
rposes, are not so much affected as
aboard ship.

f prime quality, maintains its figure,
e no rise. Coarse and inferior is worth
money.
s is worth ¼d. per lb. more money.
nges about 7d. per lb. : in Smithfield
a trifle more.

Pork *is heavy : small pigs, (porkers) however sell readily at a trifling advance.*

Potatoes *are a perfect drug. The anticipations so fondly indulged by those growers who had the good fortune to secure a crop that they would sell like gold this spring, seems unlikely to be realised. The Irish and Scotch supplies have a tendency to keep down our markets, and we cannot calculate upon a rise so long as this is the case.*

LONDON, Feb. 24.		Per Qr.	
Wheat, Essex and Kent, new, red		46	48
White	46	50	54
White, old		52	56
Rye, old		30	34
New		36	—
Barley, Grinding		27	30
Malting		33	35
Chevalier		36	—
Irish		26	28
Bere		26	—
Malt, Suffolk and Norfolk		58	63
Brown		56	60
Kingston and Ware		60	—
Chevalier		65	—
Oats, Yorksh. & Lincolnsh., feed		22	23
Potatoe		23	24
Youghall and Cork black		20	22
Cork, white		21	23
Dublin		21	22
Black		20	22
Scotch feed		22	23
Potatoe		22	23
Limerick	22	23	24
Beans, Tick, new		34	36
Old, small		38	40
Peas, Grey		34	36
Maple		35	36
White		33	35
Boilers		36	38

Seed, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..45
Mustard, White...... 6 7
Brown .... 8 11 per bush.
Flour, Town-made 42 —
Suffolk..... 33 35 per sk. of 280 lbs.
Stockton and Norfolk 33 35

FOREIGN GRAIN AND FLOUR IN BOND.

Wheat, Dantzic		32	36
Hamburgh		30	—
Rostock		30	—
Barley		20	24
Oats, Brew		17	18
Feed		15	17
Beans	—	24	29

PEAS	28	32
FLOUR, American, per barrel	19	—
Baltic	18	—

LONDON AVERAGES.

		£.	s.	d.
Wheat	5559 qrs.	2	8	2
Barley	6861	1	13	1
Oats	21054	1	2	6
Beans	1552	1	15	5
Peas	876	1	15	1
Rye		0	0	0

SEED MARKET.

	s.		s.
Canary, per qr.	46	to	52
Carraway, per cwt.	44	to	46
Clover, red, English	50	to	58
„ „ Foreign	45	to	55
„ white, English	65	to	66
„ „ Foreign	55	to	65
Coriander	12	to	18
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000	£13	to	£13 5s.
„ „ Foreign, p. ton	£8 15s.	to	£9 5
Mustard, white, per bushel	12	to	14
„ superfine „	—	to	—
„ brown „	12	to	17
Rapeseed, English, per last	£24	to	26
Tares, English, spring p. bushel.	6s 6d	to	7 6
Foreign „ „ „	—	to	—

LIVERPOOL, Feb. 25.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ⅌ 70lbs.	7	2	7	4
Ditto, red	6	8	6	10
Irish white, new	6	6	6	10
Egyptian	5	9	6	0
Oats, Eng. mealing, ⅌ 45lbs.	3	0	3	9
Irish	2	10	3	0
Welsh	2	9	2	11
Barley, Eng. malting ⅌ imp. qr.	34	0	36	0
Grinding	0	0	0	0
Irish and Scotch	4	3	4	8
Rye, per imp. qr.	32	0	34	0
Beans, English, per imp. qr.	36	0	39	0
Irish and Scotch	34	0	37	0
Foreign	38	0	40	0
Egyptian, per 480lbs.	31	6	32	0
Peas, English, per imp. qr.	38	0	40	0
Foreign	36	0	38	0
Malt, per imp. qr., fine	60	0	62	0
Flour, English, per 280lbs.	36	0	39	0
Irish	35	0	38	0
Foreign, duty-paid, per 190lbs., U.S.	27	0	28	0
Canadian	26	0	27	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	24	6	25	0
Irish	24	0	24	3
Indian Corn, per 480lbs.	27	0	30	0

PRICE OF AGRICULTURAL PRODUCE

LIVERPOOL, Feb. 25.

Hay, best	1s	1½
Clover ditto	1	0
Green ditto	0	2
Vetches	0	0
Straw.		
Wheat	0	6
Oat	0	6¾
Barley	0	4½

Potatoes.	s.	d.
Short tops	1	11
Red apple	0	0
Cups	1	11
Cattle	1	8½
Turnips pr ton	28	6
Carrots	37	0
Mangle	0	0

Cattle Markets.

LONDON, SMITHFIELD.

Feb. 24, 1845.	⅌ st. of 8 lbs.				
	s.	d.		s.	d.
Inferior coarse beasts	2	6	to	2	10
Second quality do.	3	0	to	3	
Prime large Oxen	3	6	to	3	
Prime Scots, &c.	3	10	to	4	
Coarse and inferior Sheep	2	10	to	3	
Second quality do.	3	4	to	3	
Prime coarse woolled do	3	10	to	4	
Prime Southdown do	4	2	to	4	
Large coarse calves	3	10	to	4	
Prime small do	4	8	to	5	
Large Hogs	3	0	to	3	
Neat small Porkers	3	10	to	4	

LIVERPOOL, Feb. 24.

	s.	d.	s.	
Beef, per lb.	0	5¾	0	
Mutton	0	6½	0	
Lamb	0	0	0	

MANURES.

Subjoined are the prices of several sorts of manure:—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. per cwt.
Guano, 10s. to 12s. per cwt., according quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. per ton landed and housed, 38s. to 42s. per
Nitrate of Soda, 16s. 0d. (duty pd.) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per pack sufficient foı three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 6s. per cwt.
Compost, £3. 12s. 6d. per hhd. sufficient three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphuric Acid, 1½d. per lb.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

APRIL—1845.

ING offered our columns for the dis-
n of that most important and inter-
question, the Stall-feeding of Milch
we need hardly say how glad we
e to receive, from any quarter, in-
ion on the subject. We invite, then,
ctical friends to a consideration of
tter; and we assure them that *all*
ave fair play—a clear stage and no
. There is but one condition which
inclined to impose, which is, that
icles sent to us shall be void of per-
y--short, and to the point. Had we
ce in our columns which some of
thren of the broad sheet have, we
, even then, insist upon as much
sation as possible, for as the ques-
one of a purely practical nature,
s no room, as there is certainly no
ty for "*fine writing.*" Plain matters
for plain men, placed before them
n and intelligible language, is what
m on behalf our readers; and sure
that, whether as amateur farmers,
ers from necessity, there is every
ion on the part of those who have
announced to us their intention to
rt in the discussion, to treat the sub-
t ought to be treated, and with the
ction of as little extraneous matter
ble.

AGRICULTURAL IMPROVEMENT,

IN CHESHIRE.

IN reading the Prize Essay of Mr. Palin in the Journal of the Royal Agricultural Society, and also Mr. Dixon's Report on the Agriculture of Cheshire, which, though not successful, is well worth a perusal, I was forcibly struck with the spread of agricultural improvement that was extending itself far and wide throughout this county in general. The laudible efforts that have been making, for many years, in the two most important branches of husbandry, draining and manuring, and particularly in the application of bone manure, have already produced a wonderful effect in rescuing a large portion of its stiff clayey land from the barren state in which it had so long remained nearly unproductive, and give the promise of its vieing in time with the better grazing districts of the country. The principal object of the Royal Agricultural Society, in offering rewards for such essays as the above, has been to obtain a detailed and practical exposition of the agriculture of each county in England, and thus to elicit truth by comparative analysis. The writers of them have therefore been fully justified in restricting their remarks chiefly to a full and accurate statement of facts, leaving to their readers to make a more searching inquisition into the points of the system described, and to draw their own conclusions from it.

If we look into the merits of this system we shall see much to approve and commend; yet it may be doubted whether there are not in it defects to be remedied, both in principle and practice, and new expedients to be tried, before the land can be made as remunerative as it fairly should be from its natural properties, and the local circumstances connected with it.

The fame of Cheshire cheese is known all the world over. The profits from it are so generally admitted, that any course of husbandry that interfered with them might at first sight be considered injurious and wrong: yet it may be a question, whether the desired object might not be better attained, and the returns be made infinitely more lucrative from a totally different method of farming.

In an article in one of your late numbers, signed 'Festina Lente,' (I lente might perhaps have been more appropriate,) some severe animadversions are passed on the speech of the late President of the Manchester Agricultural Society for recommending stall-feeding. These seem quite uncalled for. It is true that the rich Stilton cheese is made from the rich pastures of Leicestershire, but it does not necessarily follow that this is the most profitable sort of farming; or whether, if the cattle were kept in the house all the year round, and the whole land were converted into arable, a greater gain would not be obtained from it. So far from the health of the cows suffering from such confinement, there is reason to believe that it would be more likely to be benefited, than by their being turned out into the open fields to be starved in the winter time, or in the summer by their running loose under a scorching sun, often driven nearly to madness by flies and insects. Even the advocates of the turning-out system are frequently disposed to keep them in the house during the day in hot weather, and to turn them out only in the night. As to the grazing plan being more favourable for the making of milk, both as to quantity and quality, this may be the case in some choice pieces of land of extraordinary fertility, but if we take the generality of pastures, such as they are in this part of the country, there can be no doubt but that winter tares, lucerne, and Italian rye-grass, are more succulent and nutritious than the natural grasses, and will answer better for making either cheese or butter. Sir J. Sinclair is quoted in the *Gardener's Chronicle* as giving seven reasons for soiling cattle: one of them is for its giving a larger product of milk, and another for the saving of food. An experiment is mentioned, in which 33 head of cattle were, from the 20th of May to the 1st of October, kept on 17½ statute acres, when it would have required 50 acres to have pastured them. Sir J. Sinclair is a high authority in such matters. His book on the Scotch Husbandry is a standard work. It was principally owing to him that was laid the foundation of a great and valuable system, which has been followed up with so much zeal and alacrity as to have at length reached its present high elevation.

But it may be alleged that the land in Cheshire is not suited to the plough. The greater part of it is of a stiff cold nature, saddens, and becomes cohesive after rain, and is then so utterly intractable, that it often cannot be worked at all, or if a sudden drought succeeds, it hardens into a stubborn consistency. This is very true, if it remains in its unreclaimed state, but let it be thorough drained, and then subsoiled or trenched, and its nature is completely changed. It becomes mellow and friable, and fit for all sorts of crops. Mr. Palin gives a striking proof of this in some allotment ground belonging to Lord Crewe, which had been so much impoverished that the tenant said, he would readily give it up if he might be released from the rates and taxes respecting it. It consisted of 30 acres, and was let out to poor people. The crops grown on these in 1844 were 1497 measures of potatoes, 298 of wheat, 22 of barley, 10 of vetches, and 70 of oats—which crops, after paying the rent, poor rates, tithe, and other charges, amount to nearly £250. Can any one doubt after this the capabilities of land under convertible husbandry? When this is attested from incontrovertible evidence, it can only arise from blind attachment to antiquated usages, or from want of insight into modern discoveries, that more attempts have not been made than hitherto have been to prove practically the truth of an experiment which may be attended with such important results.

From the two reports named, it does not appear that the farm-yard system is in general conducted in a very efficient manner in this county. Neither the construction of the buildings, nor the use to which these are applied, are such as to enable a cultivator on an extensive occupancy to carry on the arable system beneficially to any considerable extent. The main pillar of the whole of this is the raising of large supplies of manure through the agency of feeding bullocks and other stock, and in taking advantage of different means within reach of increasing this, so as to provide for what is wanted for the green crop, and at the same time not to leave destitute the grass land; and if the artificial grasses can come in for their share, it will not only greatly increase their growth, but forward them so that they can be cut much earlier. Mr. Dixon mentions the astonishing quantity of dung carted through one of the toll-bars near Manchester, averaging 777 two-horse cart-loads in one day: this, though very creditable to a set of spirited and enterprising undertakers, yet, is no criterion as a guide to a general good system of farming. It is often much better to make the manure on the premises than to cart it from any considerable distance; and the best test of good farming is shewn in bringing poor land into proper cultivation, not by extraneous advantages, but by relying on those resources, which the peculiar position and nature of the farm can command within itself, if properly attended to.

I have already dwelt on the value and superiority of arable cultivation, as far exceeding, in point of profit, and I might likewise add, in beauty of culture, anything that can be obtained from grass land. Grass will grow, be it ever so poor and miserable; but to swell out a bulbous root to its proper bulk and consistence, to cause a crop of clover so to luxuriate as to overspread the whole ground from its height and fullness, to throw the whole strength of the soil and the richness of the manure, not into the weeds for these have been extirpated, but into a drilled crop of turnips or corn, will need the whole life of man to do it to the best advantage, will require books to be read, and different prolepsis to be studied, before any just approach can be made to perfection; and even then we may be eft far behind. To accomplish this desirable end, three things are wanted, capital, intelligence, and skill—capital to provide stock for making manure, intelligence to know the best mode of raising crops, and skill for bringing these crops to maturity. The first step towards the accomplishment of this end, the *sine qua non* of all good husbandry, is draining; unless this be first done, any attempt at further improvement would be, as has been justly observed, like building a house on a bad foundation, It is inexcusable to be backward in this when tiles can be made so cheap, the cylindrical ones by Mr. Clayton's machine at about 15s. per 1000, and when Mr. Wilbraham and Mr. Davenport have set so good an example by their having each 4 kilns on different parts of their estates. It is from want of this preliminary proceeding that so many failures have taken place on ploughed land. I would here draw the representation of two fields, which came under my own notice; these were adjoining to each other, and of precisely the same quality of land under different management; the one was in its natural undrained state, with water lying in the furrows after rain, and the soil consequently stiff and stubborn. A fallow was wont to come round every third year, and that anything but a clean one. The wheat crop usually did not reach more than about 16 bushels per acre, the succeeding crop was beans sown broadcast, and these half smothered with weeds. The land had then become so foul as to require another fallow. Now what return can this possibly give? Is it not rather farming to a certain loss? The other field has been double enched with the spade, after having been eviously thorough drained. All fallowing has here been dispensed, a crop of potatoes or turnips being substituted for it, and a good crop of seeds following the wheat, a great return is produced.

My opinion decidedly is, after having given the matter every consideration, after having watched minutely the action of water upon land, and endeavoured to obtain a knowledge of its practical effects, that draining is not required to be done so deep as some people imagine. I am aware that there are many fashionable theories against me, but then I frequently find that even the advocates of deep draining virtually acknowledge the truth of the former opinion by filling up their drains with straw or some light material, in order to bring their drains nearer to the surface. Much of the water, according to my notion, runs on the surface. Some, no doubt, percolates through the soil—when it reaches the solid substratum underneath, there it lodges and stagnates. But I deny that it does or can penetrate the impervious mass of solid clay below it. Let this be cut into some six or eight feet deep, and no water issues from it; there are no fissures in it through which water can pass: it is dry, hard, and impenetrable to water, almost as much as a granite rock. What is the object of subsoiling, but to loosen a larger portion of the upper part of this hard substance, and so by degrees to ameliorate its quality, in order that the finer fibres of the plants may have room to shoot the deeper? But no subsoiling can descend deeper into the earth than about 12 inches. If then the tile be placed 24 inches deep or 12 inches below the top of the clay, it will be amply sufficient to carry off the water from the lodgment of water made, and to lay the soil above it perfectly dry.

But I am further of opinion that much more of the water passes off on the surface, than these fashionable theorists will allow. All the draining in the best grass countries is done in the furrow; and that generally at a very shallow depth, chiefly about 16 inches. Some years ago I had a thin-sheared field all covered with rushes. The drainage of it was done in the furrow, and at a very shallow depth, many of them only a few inches from the surface. The rushes gradually disappeared, and the land was laid as dry, as if the drains had been made three feet deep, which some people recommend. There is one plan mentioned as being practised in Cheshire, which is as near perfect as possible. This is, to preserve the form of the butts, and to throw the drills across them. The water runs from the higher part of the butt to the lower; and is there caught by the drain and carried off. If the drills are made longitudinally with the butts, the water will lodge in them after rain, unless the land has been subsoiled.

From what has been said of the two fields alluded to in the preceding part of this, and also in the allotment ground mentioned by Mr. Palin, it is very evident what may be effected by land being placed under a judicious course of treatment, such as has been described. Here then is the solution of the whole mystery of Scotch farming. To those who have investigated the principles upon which it is grounded—who have seen the working of it and the results flowing from it, the necessary consequences are as apparent as the deductions in a problem of Euclid. Look at the low rents quoted by Mr. Dixon, in some parts of Cheshire. In some instances these are placed so low as £1 per acre. Ought not this to arouse every spirited agriculturist to examine into the causes of this great depression, and to endeavour to find a remedy?

Some incredulous caviller may here say, Are we to rush blindly into the wild theories of some visionary enthusiast? Are we to break up our old pastures, which have been so long the delight of the grazier, and so agreeable to the eye, on a mere chimerical speculation? In answer to this it may be said, that though the utility of it has been proved, not from theory, but from facts, yet a cautious procedure is advisable. It does not necessarily follow, because a measure may be good in one instance, it may be the same in all. Much skill and science may have to be acquired before the instruments, with which we may have to act, are properly adapted to their purpose. What may be done safely would be this: In any new lease let five fields be appropriated for trying the new system; let these be placed in a schedule, each crop (two years' seeds included) being duly specified and rigidly enforced. If this plan succeeds, add 5 more fields to be treated in the same way, either on a new term or when circumstances may render it desirable; but before you commence with this, it is quite indispensable that the fields should be drained and stirred deeply, either at the expense of the landlord or tenant. In addition to this, the farm-yard must be constructed in such a manner as to contain the necessary quantity of stock that are to be confined therein. A tank should be made in a central part of the yard to catch the drippings of the cattle from the different buildings, with a reservoir communicating with it on the outside, large enough to hold refuse soil, which, when saturated with with liquid manure, will serve to make an admirable compost; let, then, a tenant be selected who possesses activity and intelligence, and is in every respect quite equal to the undertaking, and I am much mistaken, if he does not grow rich during his term, provided a sufficient *length* of one be granted him, and if, at the expiration of it, he does not willingly come forward and give his landlord a greatly increased rent.—*Arator.*

CARBONIC ACID GAS.

Having read a number of our best agricultural chemical works, and none, I think, explaining the following query, I should feel obliged if you or any of your correspondents could inform me, in what manner the large quantity of cabonic acid gas is consumed, produced by increased combustion, &c. during the *winter months*, there being so few plants or trees in the winter season that can consume it. Science tells us that this gas exists in atmospheric air in certain proportions, from this fact I was led to conclude that it must be accumulating in a great excess, to the detriment of man and animals, still we find no perceptible difference in the air we breathe. History informs us that where this gas accumulates in large quantities, man and animals cannot respire. An explanation would oblige, yours, *E.M.I.*, *Manchester*, *Mar.* 11, 1845.

ITALIAN RYE GRASS.

Permit me to present to your readers the following particulars of a most interesting and successful experiment with the Italian rye grass, conducted by Mr. Longman Ekins, of Woodhurst—one of our *best* practical "fen" farmers. Wishing to procure a stock of genuine seed, he selected from a Highland pasture, sown with the Italian rye grass, the finest and most forward bunches, and transplanted them to a perfectly clean fallowed piece of fen land—the quantity about half a rood. This was done in the beginning of April, 1843; in the latter end of June it was *cut for seed*—thrashed, and sown immediately on a piece of fallowed land prepared on purpose. In the month of September it was cut for seed a second time, and the produce sown by the side of the first sown piece. But, from the lateness of the sowing, or more probably from not having anything sown with it to shelter it through the winter, the lat-

r did not make *quite* so good a plant as
e early sown. Still it made a good sward,
d during the summer of 1844, Mr. Ekin
s mown it twice for seed. This experi-
ent not only shows the rapid growth and
operties of the *genuine* Italian rye grass,
t it goes to show also the extreme late-
ss in the season at which it may with
fety be sown. And thus it may be made
nost excellent use of, for filling up *after*
rvest, young seeds that may be defective
her from drought or heaviness of the
eat crop. The genuineness of the seed
h which the above experiment was made
reduced to a certainty, because at the
e when this was pulled up from the
ture (in the beginning of April,) no
er grasses were more than a few inches
h, whereas this was six to eight inches;
being one of the peculiar advantages
the Italian rye grass, that it grows so
ch earlier at spring than any other. An-
er great advantage is, that it will mow
ce in a seosan, when other rye grass
l mow but once.—*A Fenman.*

◆

E "HARK FORWARD" LETTERS.

Prove all things; hold fast that which is good."—*St.*
l.

Quod verum atque decens, curo et rogo, et omnis in
sum."—*Horace, I Epistle, Book* 1, *Verse* 11.

The true, the fair, of good report,
  I seek for and regard;
Be such my humble aim and fort,
  Your welfare, my reward!

But credit me gentlemen, *yon* man is not a deacon
is craft. He damps the spirits of the poor lads he
mands, *by keeping them on the defensive*, whilk of
f implies inferiority or fear."—*Waverley.*

Far be it from me to avoid, much less
vent full, fair, and profitable discussion
on topics, public or private, which in my
cumscribed sphere of action I may at
time become identified with.

Discussion, however, ought to embrace
wledge of its subject on *each* side, a
e adherance to the question under con-
ration, a liberal interpretation of other
's motives and objects, a readiness to
ive as well as to impart information,
a calm and candid estimate of what
ther may have advanced. When, how-
, instead of such a combination, your
lers are introduced, and I am treated to a vague attack, partly upon myself personally, and partly upon an important subject of which its opponent knows absolutely nothing; when in lieu of impartial, sound, and honest comment, of skilful and gentlemanly stricture, or practical, farmer-like observation, we meet with a dictatorial, illtempered and precipitate attempt to stifle by any means, investigation into, and reasoning upon such a subject, its author can hardly expect to be treated with much ceremony in reply, nor will your readers expect that I shall be sparing in the correction of so much folly.

Your correspondent 'Festina Lente' has been very properly reminded by you, in the words of Addison's Sir Roger de Coverley, that "much may be said on both sides;" and a wiser course it would assuredly have been for him to have forborne his rash and splenetic effusion until 'Hark Forward' had stated his case, and told his tale, and meanwhile to have endeavoured after an intimacy with the subject before him, a very sensible writer having said that "before a man undertakes to write upon any subject it is advisable that he should know something about it." To enable your correspondent, however, to reach such a preliminary point, he has evidently to combat first of all a very unfortunate tendency to underrate other people, a propensity which like all causes of bad effects is itself the effect of a preceding cause, Sir Walter Scott telling us that "there is no better antidote against entertaining too high an opinion of others than having an excellent one of ourselves at the very same time."

Were I to consult my own taste or feelings merely, my notice of 'Lente' would be very, very laconic and comprehensive—very indeed, having an antipathy to controversy "for which," a good bishop of our church has remarked, "life is too short;" but then, as I hate tyranny of every kind still more, and all attempts to deprive your readers or myself of our liberty of conscience in things agricultural, as his attack extends to others whom I am in honour bound to vindicate, as too great brevity might be misconstrued, and as farmers amid all their toil and care relish a little fun occasionally, my having a brush with him may serve several good purposes, besides giving additional variety to your useful pages—the richest fields all green, forming, without bushes and brakes, a landscape too uniform.

In doing this I may trespass upon your space, but the object being the public one of securing your contributors in time to come from an evil spirit which might blight all enquiry in the bud, "denounce" any plans or suggestions, efforts or advances of the enterprising which it did not understand, stifling in the birth useful knowledge through timidity of the most unreflective character, I hope your indulgence on this occasion, especially when I assure you that as a merely controversial character I purpose not hereafter to encroach upon you.

As an entire composition 'Lente's' article is an excellent sample of the skyrocket class of fireworks, starting with an attracting exhibition of sparks and sound, tending rapidly no whither, and ending in nothing. There were such writers in the time of Horace*, and there have been of the class ever since, but nowhere have I met with one whose brilliant advice to others, and sounding counsel, were of so little individual advantage to the dealer in them. Opening with a grave descant upon "circumspection," "careful consideration," &c. and with sage warnings against "vague and visionary calculations," "theoretical dabblers," and other enemies by land and water, he proceeds instanter to throw overboard the whole of this valuable ballast as of no use to himself in a cruise undertaken without compass or chart, provisions or pilot, the natural consequence being that we have a chapter wholly void of "careful consideration" marked by fears and notions most "vague and visionary," and by that thorough misunderstanding of his subject and that entire absence of argument which are strikingly characteristic of the genuine "theoretic dabbler."

It is certainly a pity so much choice advice and caution to farmers, and such a sonorous exordium and peroration for a sermon on prudence should be neutralised for lack of its author practising what he preaches; and it is equally to be regretted that I should have to consume time belonging to a better pursuit in exposing an article which, with all its cant, is so defective in genuine, onward, vigorous benevolence, and in warm-hearted and right-handed help to the British farmer, at a crisis when he is sore let and hindered in his industrious course, and when, instead of asking for standstill sentimentality, and cold blooded cautions, he is anxiously enquiring "who will shew us any good?" and, like your sensible correspondent 'Agricola,' is ready to thank those who disinterestedly devote their leisure hours to the collecting and collating interesting records and facts for his use and consideration.

A systematic, and I may add upon principle a warm cultivator of *active* not passive patriotism and benevolence, to the extent of those means which Providence favours me with, fond of the sod of which my predecessors were for centuries honourable cultivators and possessors, I love the men who toil to turn it over, and to their interests is my mite of spare energy with purest intent heartily devoted. Not that I profess to have limited my view exclusively to the soil, or that in contemplating the operations of the *natural* I have been unmindful of the *moral* world, or forgetful of the noble maxim, "Homo sum, et nihil humanum me alienum esse puto:" but, taste has no small influence over us, and mine turns warmly to our native hills and vallies green, our fields and farms, our scenes and arts of rural life, to nature, and her wondrous works:—

> "For me, when I forget the darling theme,"
> How blows the blossom, how the fertile rain
> Gladdens the grass, or fills the growing ears;
> How harvest's ripen, how our flocks increase,
> And how succeeds the husbandman,
> "Be my tongue, may fancy paint no more,
> "And dead to joy, forget my heart to beat."

Under the influence of such feelings, I have for the first time become a contributor to your useful miscellany, upon a highly interesting and important subject, unheard of by some, imperfectly understood by others, and respecting which, its theory and its practice, earnest enquiry had arisen out of allusions made in public, by estimable practical men to existing practical experiments. As the best method of doing the subject justice, and of supplying a desideratum in our rural literature, I ventured (after a very deliberate interval) in the silence of abler pens, to attempt an enquiry into and sketch of the history of stall-feeding milch cows, which, whatever its defects, will, when completed, be found to comprise striking records, practical observations and illustrations, sound experiments and sensible arguments not to be met with in a connected form out of the pages of the *Farmers' Herald*. The subject, it will be seen as we proceed with it, is one peculiarly practical and not theoretical, in this way of treating it; not hazarding conjecture, (as your correspondent would have it supposed,) but

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* "Non fumum ex fulgore, sed ex fumo dare lucem,
Cogitat," &c.—*Ars Poet.*, *v.* 143.

One with a flash begins, and ends in smoke,
The other out of smoke brings useful light,
And (without raising expectation high)
Educes that which pleases and which benefits.

andling history, and chronicling experi-
ice rather than opinion. It must, indeed,
obvious on slight reflection, that it is a
bject possessing little theoretical interest,
d affording a mere theorist neither scope
r encouragement, its theory being like
at of steam navigation, coincident with
practice, and alike capable of being
sily established or speedily overthrown.
To a mind of any sensibility you are
rare, Mr. Editor, that it is by no means
reeable to make oneself the subject of
marks such as the foregoing, but when
attack like that of 'Lente's' partakes so
uch of what the phrenologists call "In-
viduality," it very naturally excites those
gans to which I find I have been allow-
g a little exercise.

He who writes for a "*Herald*" ought
ways to announce tidings worth hearing,
to lead us to new fields worth winning;
t your correspondent, in this era of agri-
ltural difficulty, when help is needed on
ery hand, (and when practical husband-
en, far off from where I write, as the
lley of Llangollen, are hailing our hum-
e aid with grateful courtesy) instead of
eful suggestions, encumbers us with his
ars, and in lieu of information or amend-
ent embarrasses the farmer with cautions,
d represses his enquiries with altisonant
ctures on prudence and circumspection,
ith sundry other virtues, which like that
christian charity, 'Lente' evidently
ows best by name.

At what *Heralds'* college your correspon-
nt has studied, it is not important to
ow, but it is important to most readers
the *Farmer's Herald*, when they are con-
nding with heavy rents and rates, and
ght profits, with falling markets and rising
mpetition, that they should not be de-
rred from "thinking on whatsoever things
e of good report," from availing them-
lves of improved practices, or from at-
mpting more ingenious efforts to improve
eir condition. It is equally important
at country gentlemen should not be dis-
aded from making those experiments
hich their ampler means enable them to
o, nor from proving all things, holding
st that which is good, for their own bene-
t, and that of others who are without the
eans for enterprize. And, it is also of
mmense importance to us all, that those
orthies among the wealthier owners of the
oil, who patriotically take a lively personal
nterest in our rural progress, who patron-
e British husbandry more than fashiona-
le pursuits of pleasure, and who study the interests of their tenantry and countrymen rather than those of Parisian shopkeepers, should have our grateful regards, and not our offensive sneers when they bring forward or revive subjects of high concernment to rent-paying farmers.

Of this truly noble class, my first letter instances George Wilbraham, Esq., High Sheriff of the county of Chester, and formerly one of its parliamentary representatives, in his capacity of chairman of the oldest Agricultural Society in England, bringing the subject of stall-feeding milch cows, before its members, not through the medium of *theory* or "*theoretic dabblers*," but through the direct actual experience of a practical agriculturist *present*, of high reputation and integrity, who gave upon the spot his testimony in favour of a practice, of which, details (as stated by me) were already published in a report of Cheshire Farming, drawn up by one of the inspectors of the above society, himself a rent-paying farmer acting upon Mr. Wild's plan in his own dairy management. A circumstance of publicity which your correspondent chooses wholly to overlook, as well as what your correspondent J. S. wrote in favor of stall-feeding three months prior to my letter.

Of Mr. Wilbraham, Dr. Holland in his report of Cheshire speaks as being indebted to him for "information which his superior knowledge of agriculture, and of the political economy of the county afforded him, and for the gratifying manner in which it was communicated." Mr. Palin's prize essay on Cheshire, published by the Royal Agricultural Society, (of whose council Mr. Wilbraham is a member,) bears also testimony to the practical patronage of husbandry for which the latter gentleman is well known, whose health I remember was drunk some years ago at one of the celebrated Holkham (Norfolk) sheep-shearings in highly complimentary terms as "The Father of Cheshire Husbandry."

Of my valued friend, Mr. Wild, I feel called upon to speak as one long connected with rural affairs, whose experience and judgment upon practical agriculture are as valuable, as his own practice and husbandry are excellent. In 1843 he gained the Manchester Agricultural Society's *first* premium for "*the best cultivated farm*," and the *first* for *turnips*, as well as the *first* for stock at the meeting of the South Cheshire Society, (of whose committee I perceive he is a member,) and as a set-off against 'Lente's' visionary notions, I refer your readers to page 181 of your last vol. where, in the report of the November Holywell meeting, they will find a better judge (in reference to my friend's farm-yard management) speaking of Mr. Wild as "one of the best agriculturists in the county of Chester."

In your report of the last meeting but one of the Daresbury Club, they will also find that he was one of the judges; and that on that occasion he took the opportunity of speaking upon the *advantages of stall-feeding.* This was in Feb., 1843. And for supporting his views in February, 1845, your correspondent lectures me and your readers about circumspection, deliberation, *et hoc omne genus,* as if taking two years to move in a good cause were not being deliberate enough in all conscience! I ought, perhaps, to add, that Mr. Wild, besides filling the office of agent upon one of the largest estates in his county, and being an enterprising farmer, whose fields present one of the finest specimens of the drill husbandry in Cheshire, and whose farming evinces like talent, is a prudent and pious man, whose general character, principles and years, constitute him the last individual to answer the character so unwarrantably sketched in the imagination of your flippant and presuming correspondent. Let the reader favour me with a perusal of what I have said in the middle of the 1st column of your 18th page, and then read (with patience, if he can) the pert and superficial manner in which 'Lente' speaks of persons, of whose character and standing among us he evidently knows as little as of the subject under consideration, and which he prejudgeth after a fashion much used by men who lack knowledge and argument. —Thus: "Now I am sure, that every *good experienced* dairy farmer will denounce the practice." He is "*sure,*" aye, to be sure he is! Such men are in general *sure* in proportion as they are shallow; and as Dr. Johnson says, "for arguments lay wagers." At the Manchester meeting referred to, the chairman, Mr. Wilbraham, after introducing the subject, and giving some statements in connection therewith, called upon Mr. Wild for confirmation of what had been advanced, who accordingly stood up and briefly corroborated the statements put forth by the chairman. The reader will bear in mind that Mr. Wild's facts were *already in print,* and that the pamphlet in which they were inserted *was to be had on the spot.* After-dinner meetings being but indifferently adapted for details and bad memories, Mr. Wild judiciously confined his remarks to what farmers value most, namely, *results,* giving the company a hearty welcome to any information he could give them at Weaverham Wood upon the subject. In speaking of the *effects* of soiling, he might perhaps have referred to the "*effects*" in his banker's hands; but he summed up by stating what surprised and pleased his hearers as much, "that by stall-feeding, he estimated he could ke two cows, where he had before been ab to keep only one upon the pasturing sy tem." And I conceive this was the bett plan of handling a matter after dinn which I find requires a pamphlet to hand it properly. In the face of these circumst ces 'Lente' thus writes in reference to su men as Mr. Wilbraham and Mr. Wild; "Far better," says he, "had it been the chairman to have called upon so agriculturist present, of sound judgm and experience, to state the merits and merits of the two systems of feeding, a what he found by actual experience to their respective cost and effect."

A fellow-subscriber (who politely wi draws his letter in order to make room the present one) remarks upon this pas —"Does 'Festina Lente' suppose a d farmer, who has been working all his upon the old plan of cow-keeping, to such a mere automaton as to look to oth for information as to its "cost and effect and does he suppose that with Mr. Wi statements, and 'Hark Forward's' " dences" of results, we cannot test th truth without being put into 'Lent leading strings to prevent our "runni away with false notions?" We dairy far ers are neither so helpless nor so han over-head as he evidently is, and suppo us to be; and, whatever he may thi there is far more affront than complim in his admonitions. With many of us matter is in a nut-shell—we *do* stall-fe as well as we can, from November to M and there can be no great difficulty danger in mowing grass for daily food May to Michaelmas, instead of grazin upon small farms; for upon large farm will not pay without special encour ments, of which, as my friend, 'Hark ward,' is aware. We shall no doubt h more from him ere long, his opinion bei that soiling experiments should be limit to farms not exceeding 200 statute acres *A Dairy Farmer.*"

Your readers will naturally enough mark upon this ungracious passage:—

Why, if Mr. Wild were not the man, who
s?" and they will smile at your corres-
ndent's hasty oversight of the fact, that
"agriculturist present," but Mr. Wild,
d had experience in the two systems to
alify him for speaking to their "effects."

Your correspondent (who is a very slave
his imagination, and writes as ideas
at around him) talks of the subject being
eceived with a smile of incredulity."
writer's honesty of purpose, who can
is "twist words and meanings," will
d, I apprehend, as few admirers among
r readers, as his consistency, in cla-
uring first for information, and then
nmering 'Hark Forward' for giving it;—
complaining of a want of details respect-
a practice, which, without having pa-
nce to wait for a knowledge of, he "is
e good experienced farmers will join
in denouncing." I have some ac-
intance with what I suppose 'Lente'
ans by the grammatical phrase "*good*
erienced" farmers; and I don't find
h men quite so ready at "denouncing"
he dark as he imagines they are; nor do
ften meet with men whose inconsisten-
s are so calculated as 'Lente's' to make
r readers merry. Evidently, through
ne not-to-be-defined motive, he really
nts no information upon the subject, on
ich his mind is *made up* beforehand:
spirit in which he writes shewing that
were vain to think of pleasing him on
h a topic, and reminding us of Sheri-
n's description of a certain M. P.'s
soning and candour—

> "I do not like you, Dr. Fell;
> The reason why I cannot tell:
> But this, I'm sure I know full well,
> I do not like you, Dr. Fell."

d, therefore, "that the practice of hous-
cows throughout the year is equally ex-
nsive to the farmer and injurious to the
d he does not hesitate to say." "Hesitate,"
, indeed! Hesitation is no virtue of his,
atever consistency and discretion may
, for it will appear as we proceed, that
usually discards it where it is most re-
site. Thus, he professes familiarity
h the agricultural movements of the day;
ails them," as Cowper says, "Tom and
k;" commends our rural seminaries,
. and compliments those of us who pa-
nise them by our sons; without ever
rehending the awkward fact that *stall-*
ing milch cows is a prominent feature of
modern self-supporting rural schools!
spite of this and other unlucky passages in English, it must be admitted that he can give advice in Latin; but as he does not translate it, I fear he does not comprehend the full sense of his author, which I here give for his own special benefit.—"Si possitis celeriter ite, semper tamen vigilanter." *(If possible, go a-head, but don't go head over heels.)* His remarks are not wholly destitute of originality. The only one, however, which I can at present exhibit for your readers' entertainment, refers to a subject incidentally touched upon by me, in connection with which he has made the very singular discovery, that what is in accordance with scientific principles may, nevertheless, be opposed to *truth and sense!*—But the passage is given with so much *gentlemanly taste*, that I must quote it in his own terms. Referring to my remarks upon cheese, he says, they "are equally false and ridiculous; they may be in accordance with scientific principles, &c." A tolerable sample this of the gentleman, as well as of the philosopher and man of science. As most of your readers will prefer, however, remarks "in accordance with scientific principles" to remarks like your correspondent's, in accordance with no principles at all, I leave mine to their course; and in conclusion, must do 'Lente' the justice to admit that he has, in one instance, evinced something resembling caution. After endeavouring to create the horrors against *soiling*, by referring to "the ill effects resulting from the practice," he "declines" going into a detail of them," which certainly exhibits some self-control, since we are sure that, to have "stated the demerits," and to have "detailed the ill effects" of the system, would have been a task most agreeable to his taste. He, however, "declines" it; and a very prudent declension it is, for two reasons—first, because the "ill effects" must exist before they *can* be "detailed;" and secondly, because if they exist, *he does not know it;* for he tells us distinctly, that of all the dairies he has inspected, "*in not a single instance are the cows stall-fed!*" What an accomplished and experienced commentator on stall-feeding!

Now your readers will find that 'Hark! Forward' will not "*decline* going into details "of effects resulting from the practice, and that as he proceeds they will enjoy still more the head-over-heels' trip-up thus given to his own commentary by your correspondent, whose declension of *details* will do as much as I could wish to upset his logic and his *lente*,* and to make your readers hark-forward more than ever. There are some marvellously comical statements put forth by him which I cannot now notice but must do hereafter; meantime instead of puzzling your readers with untranslated Latinisms, permit me, in closing, to avail myself for the benefit of 'Lente' as well as of the "young farmer" and myself, of some plain English good sense, from a source which is easier of access than Cæsar or Cicero, and which I hope to see extending its usefulness daily; not doubting that had I written nothing more than the following admirable and nervous sentiments, they would have been received by your candid readers as a sufficient justification of myself and my esteemed friends, in submitting respectfully to the public the duty of reconsidering the important subject of stall-feeding milch cows:—"Living generally very much apart from society, the British farmer has need of all that can be done for him, with a view to extend his acquaintance with men and things; to root out that mass of unwarrantable prepossession which from his isolated position too often hangs about him, and to substitute (in the words of Sir Humphrey Davy) "sound and rational principles for vague popular prejudices."" (*The Farmers' Herald, the Editor to his Correspondents, vol. I, p.* 17, *Feb.* 1843.)—*Hark Forward.*

P. S. The interruption occasioned this month by the foregoing article, must be my apology to your worthy correspondent 'Agricola,' for omitting a direct reply to his communication, which however shall be specially noticed in the sequel.

◆

ON FEEDING CATTLE.

As the mode of treatment adopted by me differs, I believe, in some respects from what is generally acted on, I shall shortly state the course which I have followed for years.

First, as to the construction of the feeding byre. It is single-headed, and twenty-one feet wide, and thus apportioned: a space of six feet in front of the cattle is used for a passage, and turnip store; the manger is two feet wide, and stands 18 inches above the saddle. It is built of
stone and lime, and finished with a pave-
ment sole, having a framing of wood nex
the passage, sixteen inches high, and nex
the saddle, their is a beam of six inch
high above the sole of the pavement. T
saddle is seven feet long; and the remai
ing six feet are required for a strand a
passage behind the cattle. The causewa
ing of the three feet of the saddle next t
manger is almost level; but on the rema
ing four feet, there is a pretty quick sl
to the strand. This slope is kept up to
level by a plentiful supply of litter, whi
not only allows the cattle to rest easy,
permits the urine to pass below it and
into the strand, from which it is convey
by means of drain tiles, to the roofed u
tank outside. The division or traver
betwixt each pair of cattle does not
farther than the beam on the front of
manger; but the space across the ma
is closed by a sliding board dividing e
pair. Above the manger, there is a p
of glass in the roof for each pair of cat
and the advantages arising from this
that the servant is enabled to clean
groom the cattle with shut doors, and
that means preserving an even tempera
in the byre, as well as to see that the m
ger is kept clean; and this is done by
stepping into and sweeping it with a br
from one end of the byre to the ot
taking out the sliding divisions in
manger as he passes along.

Having described the byre, I shall
notice the different kinds of food u
and as I consider it of no small valu
may also mention, that a piece of rock
is always kept in the manger before e
pair of cattle, and as they use a good
of it, I think I may safely ascribe to it
total absence of swelling or hove amon
the stock. I generally house my st
about the first week of October; and
five or six weeks thereafter, the tur
used consist entirely of Pomeranian Gl
afterwards, of Yellow Bullock; and
spring, a portion of Swedes. A supply
turnips is always stored in the space
front of the cattle, which is of much adv
tage for various reasons, such as insuri
fresh supply during frosty weather, as w
as enabling the servant to give the morn
feed with closed doors, which is alw
done at five o'clock, A.M. At noon, a f
of turnips is again given, and when potat
do not exceed seven shillings per boll
thirty-two stones, I prefer a mixture
about one-half thereof. At two o'clock th
mangers are cleared and swept out, as

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* Festina Lente—*On slow*, or literally, *hasten leisurely*, a proverb met with in Erasmus's Adagia, and used as the punning motto of the Onslow family, on whose arms it reads well enough, though sadly abused when applied to a farmer's *arms*, who will find *plus ultra* (onward) a far better maxim for keeping pace with the times.

ly described; and after this has
the third and last feed for the
ı; and here I much approve of
ometimes oat straw is used; at
or wheat chaff. Then, for a
at a time, brewer's grains, occa-
xed with linseed meal; but the
equently used consists of bruised
ıseed. The oats and linseed are
y running them through com-
lers attached to the thrashing
oats are only flattened, but the
educed to dust, and they are
together with cold water, and
py and a half of the mixture
ch beast. The quantity of lin-
to each is about one and a half
ght. Probably the expense of
ay to some appear too great to
fter a fair trial, I am inclined
at it will be found to pay even
say nothing of the indirect gain
n the saving of fodder. The
ıe oats is well known; and by
linseed at fifty shillings per
expense can be at once ascer-

e are all carefully groomed once
I consider it of great import-
e all the superfluous hair re-
ticularly from the shoulders and
in some cases, where the coat
ugh, I have had the whole body
he byre I have described con-
-two cattle, and I have only to
to attend to these and ten or
rs in a court adjoining, requires
nd undivided attention of one
wed turnips and all other keep
ght to him. — *David Dickson,*
rk.—Scot. Far.

◆

ACTURE OF MANURES.

may affirm, from what I fre-
tness in the mode of making and
manure, that many do not suffi-
nsider the great difference be-
ng and weak manure, in its
quality and durable effects in
ıg the land to which it is applied;
s an important thing for every
well understand. If straw and
without cake or corn, compose
re that is taken to the land (and
my knowledge, even of those
l well afford to buy them, con-
bad practice), comparatively it
small beer to a man who has an
ary task of labour to perform, and needs the aid of a powerful stimulant to enable him to accomplish it. As the man would fall short under such treatment, so does the land fail in like manner. Now if I can show that the corn given to stock upon a farm, is all returned in extra produce, besides manifold advantages, which your sagacious readers will readily discover, surely all that have the means of entering upon this system will do so. I will take my own business for an example. I shall this winter use 100 quarters of corn upon my stock, exclusive of horses. I calculate the manure I shall make with which this corn is incorporated will manure well 36 acres, and as my system of farming is three crops and a fallow, three crops will be gathered before the same land will be manured again. I will ask any practical farmer may I not reasonably calculate upon a quarter of corn per acre more upon each of the three crops, than I might have expected had I put on the same land the same quantity of manure of the weak kind, made from hay and straw alone? Assuming, then, that I get one quarter of corn more in each of the three crops by using the corn, the 36 acres in the three years return 108 quarters extra produce for the 100 expended. Of course it will be obvious to every practical man, that rich manures should not lie in the yard, exposed to the washing of heavy rains, but made principally under cover, and frequently collected into a heap, and well secured until taken to the land, and especial care taken that the fermentation does not become too rapid; to prevent which anything may be mixed when it is put together that is likely to check and cool it. I use sand when I cannot obtain anything better for that purpose, and to cover the heap over to prevent it being weakened by evaporation. A farmer does not require a philosopher or a chemist to inform him wherein the strength of manure consists; he has only to refer to his cattle-stalls, his pig-sty, and dove-cote; it is there seen that the manure that contains the most corn in proportion to other matter composing it, is invariably found to be the strongest and best.—*A farmer, in Bell's Weekly Messenger.*

◆

ON PLOUGHING IN GREEN PLANTS AS MANURES.

THIS very important means of enriching the soil has been but too little attended to in Britain, particularly in Scotland. The chief causes of its neglect are—1st, the want of a due appreciation of its value; 2nd, The lateness of the harvest, and consequent slowness of growth between the time of sowing the plants and that of ploughing them in; 3rd, Its being inadmissible except at particular points of the rotations in common use; and 4th, The carrying out to an unwarrantable extent the principle, that green vegetable substances, to be profitably employed as manures, ought to be, in the first place, used as food for animls.

It will readily be granted, that the amount of produce that can, in any shape, be exported from a farm, without deteriorating the land, is a portion corresponding to what the crops have drawn from the air, above what was contained by the manure. Inorganic substances are derived exclusively from the soil, but as crops contain a certain proportion of these, the supply must be maintained either by decomposition of mineral matter in the soil—and even in the best soils this is but a limited source—or by manures obtained from sources foreign to the farm. It follows, then, that if plants capable of drawing largely on the air are grown, and ploughed in at the time they contain most of the matter so derived, and in a condition favourable to steady and complete decay, that all that could be exported is gain, and is laid up in the soil, to enable it to minister to other crops of more profitable kinds. The plants which form the most valuable food for animals are almost all incapable of being raised on very poor soils, and they draw most largely on the soil for support; there are, however, others less fitted for feeding animals, that draw largely on the air, and are capable of growing on poor soils; it is these that are most appropriately employed for green manuring. In selecting plants for this purpose, care should be taken that they are rapid growers, nourished chiefly at the expense of the air, capable of autumnal growth, and that they are hardy and suitable to the soil and climate.

Green plants are greatly superior to dry ones as manure, in being capable of speedier and more complete decomposition. Dry vegetable matter introduced into the soil decomposes slowly, because, in drying, changes have already taken place in the sap that render it less prone to decomposition, even in the presence of air and moisture; hence, straw requires to be mixed with other decomposing substances, such as animal excrements, and turned over in a heap, before it becomes fit for the purpose of profitable manuring. But this is not the case with green succulent plants; their sap contains albumen, and other azotised principles, highly *susceptible of* decomposition, and which readily *induce decay* on the woody and cellular tissues *of the plants*, particularly in the green and succulent state in which they exist when the pl
is coming into flower. Green plants, t
being very susceptible of decay, it is obviou
of importance to plough them in to such a de
as will prevent the drying action of the air,
not so deeply but that the amount of air ne
sary for the process of decay can obtain acc
Three or four inches will in general suffic
this purpose.

Different plants have been recommended
used for the purpose of green-manuring s
as pease, vetches, aftermath clover, buck-wh
lupine, rye, spurrey, rape, &c.; each, perh
deserving preference in particular localities,
under circumstances of soil, climate, and r
tion, of which practical farmers will have l
difficulty in judging.

It is worthy of the consideration of those
farm stiff soils, where the naked fallow is in
pensable, whether, in favourable seasons, w
the tillage and clearing of weeds have been
through early, it would not be possible to r
a crop of some of the before-mentioned pla
in time to be ploughed in, before the tim
sowing winter wheat. It is not meant that
could supersede the common manuring; bu
is certainly one of the expedients that ough
be had recourse to, especially on stiff clay fa
where the rotation is short, and where, from
want of fallow-crops, the sources of manure
much curtailed. It may be remarked as a f
ther inducement, that wheat is one of the cr
most benefited by this kind of manure.

In this country, almost the only case wh
green plants, or rather parts of plants, are s
tematically ploughed in, is when grass or p
ture is broken up. The breaking up of la
undoubtedly a case of green manuring, althou
most farmers have not been accustomed to v
it in this light. Under the head of rotatio
crops, it will be shewn what reason there i
believe that, while the land is in lea, the
becomes enriched by the excretions of
grasses and clovers. Apart from this, howev
any one may readily satisfy himself by caref
examining a piece of a furrow-slice of lea, t
the roots and lower parts of the stems of t
grasses and clover bear a considerable prop
tion, especially in dry weight, to the part th
depastured or mown; and being ploughed d
in a green state, and undergoing steady
complete decay in the soil, they afford la
supplies of nourishment to the succeeding g
crop. From these considerations, it fol
that, to obtain the full benefit from breaking
lea, it should be done as soon after harvest
possible, while the herbage is still green
juicy; and that there is no economy in dep
turing too closely.

In lands that admit of fallow crops, such

rnips, a method of green-crop manuring is
ginning to be adopted in some localities, that
mises to be attended with great success, and
serves to be more generally known ; it is the
ughing in of the tops and tails of the turnips.
hen winter wheat is to succeed turnips, there
a necessity for clearing the ground, and then
bulbs only are stored, the tops and tails
ng ploughed in. When it is to be a spring
p, it is better to allow the turnips to remain
ger in the ground, both to attain their full
wth, and for preservation ; but even in that
e, it is necessary to have a supply stored for
rd frosts and very wet weather ; and there can
no doubt that the Swedes and yellows left for
ing consumption, ought to be stored before
first indications of spring growth. It is
erally admitted that when turnips are stored,
tops and tails should be left in the field ;
t it is here maintained, that in all cases they
uld be so, because it is only in autumn that
y considerable portion of the leaves are eaten
stock. After November cattle generally re-
e the leaves, and they are of course left to
ther in the air, or are thrown on the dung-
l ; in either case, almost the only portion of
m that reaches the field is the inorganic
t ; the organic portion being wasted. In the
alities where ploughing in the tops and tails
been adopted, it is done to the whole crop,
what is drawn for immediate use, as well as
at is stored. The turnips are of course
own in drills ; as each turnip is drawn, the
and tail are struck off with a curved knife
ragment of a sickle, and laid evenly in the
ow between the drills. When the bulbs are
ed off, the tops and tails are the same day
ered in by means of the plough. The
n grown after this dressing has always been
d to be of fine quality, and not liable to be
ged. With the view of ascertaining the
parative value of this method, I have seve-
times had the produce weighed from two
s of the same field, the one treated as
ve, the other eaten off by sheep ; and have
d the balance, both in quantity and weight
grain, in favour of the ploughing in of the
and tails. Unless where wheat is to suc-
turnips on a soil so light and friable as to
nd the treading of the sheep for textural
ovement, this method of green manuring
ves a trial. The one peculiarity of subse-
t treatment that needs to be noticed is,
the braird of the grain crop requires more
ng than usual, and with a heavy roller.—
m many trials made in the months of No-
mber and December, 1842, I find that the
tio, by weight, of the tops and tails to the
lbs is, on an average, *1 to 3.3. But 25 tons*
bulbs, per imperial acre, is considered a good crop ; and this would give 7 tons 12 cwt. 2 qrs. of tops and tails, which should produce as great an effect on the succeeding crops as a dose of 10 tons of well prepared farm-yard manure.—Of turnip leaves no accurate analysis, so far as I am aware, has yet been published ; but they are known to contain a considerable proportion of saline and earthy matter, not to mention the purely organic part, capable of nourishing the succeeding crops of the rotation. If Sprengel's estimate may be relied on, namely, that green turnip leaves contain 1.8 per cent. of inorganic matter, the quantity above specified would contain 303½ lbs. Now when the effect of a much smaller dose of mixed saline manures is considered, it will not appear strange that so much stress has been laid on ploughing in green turnip-tops, as a means of enriching the soil and securing good after-crops. It may also be noticed here, that when turnips are eaten off by sheep, it is important to have the droppings and cups ploughed in the moment the nets are removed, unless where the land is already very rich, and the crops more than ordinarily liable to be attacked by wire-worm and other insects.—*Notes to Sir H. Davy's Lecture.*

◆

ON THE MISMANAGEMENT OF STABLE-DUNG MANURE,

ESPECIALLY AS REGARDS EXPOSURE TO RAIN.

Whilst, at a vast expense, the farmer is importing bones from the shores of the Black Sea, nitrate of soda from South America, guano from the coast of Peru and from the African coast, he is, in too many instances, negligent of the manure that his stable and stalls supply. This negligence has been pointed out, and emphatically dwelt on, by every recent writer of authority on agriculture. As regards exposure to rain, and the injurious effects of it on the kind of manure just alluded to, examples of it, in this part of England (Westmoreland), where an unusual quantity of rain falls, are of every-day occurrence, and almost everywhere to be met with : the instances of neglect constitute the rule ; of care and attention, the rare exception to the rule. The farm-steadings here are commonly on declivities ; the dung heap is usually placed on a declivity, often by the side of a road, and, in consequence, after every shower of rain, the water that runs off, percolating through the manure, robs it of some of its most valuable ingredients, especially its soluble salts, and soluble animal and vegetable matter, tending to starve the fields and pollute the roads. I have had the curiosity to collect portions of such drainage, and subject them to examination; and I now propose to give the results, as they show, in a very marked manner, the injurious effect, and how great is the loss to the farmer in consequence.

The first portion collected was from a heap of stable-dung, fresh from the stable just before a heavy fall of rain, the accompaniment of a thunder-storm, nearly an inch falling in three hours. The water which ran from the dung-heap was of the colour of a weak infusion of coffee, of sp. gr. 1002, to pure water as 1000. With the peculiar smell of stable-dung, it had a just perceptible smell of ammonia, which was rendered more distinct by the addition of lime. Under the microscope, it was found to contain, besides a fine granular matter, and many minute vegetable fibres and scales, particles resembling grains of pollen, and two or three different kinds of animalcules. Evaporated to dryness, it yielded 2-6 per 1000 of brown matter, which partially deliquesced on exposure to a moist atmosphere; emitted a very faint smell of ammonia when mixed with lime, indicating that, in the process of evaporation, most of the ammoniacal salt had been expelled, and was therefore carbonate of ammonia; and when incinerated afforded as much as 51.6 per cent. of grey ash—48.4 per cent. of the extract having been destroyed by the fire, which may be considered as animal and vegetable matter. The ash was found to contain the sulphuric, phosphoric, and carbonic acids, and chlorine, with potash, soda, lime, and magnesia, chiefly in the form, it may be inferred, of carbonate of *potash,* phosphate of lime, sulphate of *lime, sulphate* of magnesia, and common *salt.* The proportional quantity of the sulphate of lime was large, as was also that of the fixed alkaline salts, whilst that of the phosphate of lime and the magnesian salt was small. The next specimen examined was from a much larger and older dung-heap, after a fall of 1.12 inch of rain in about 12 hours. The fluid was of a darke brown than the preceding, very similar in its appearance under the microscope, o higher sp. gr., viz., 1008, and yet less ric in ammoniacal salts, for when mixed wit lime, it gave only a very faint smell of ammonia; and its extract obtained by evaporation, when mixed with lime, had no sme of the volatile alkali. It yielded, on evap ration, 10.4 per 1000 solid matter, simil generally to that obtained from the fir portion in its qualities, abounding, in lik manner, in salts, and those of the sam description. The third specimen collecte for examination was from the same dung heap, after a fall of 2.79 inches of rain i 24 hours. It differed so little from th preceding, that it is not necessary to de scribe it particularly. As might have bee expected, it was more dilute, its sp. g being 1004. The last specimen I sh notice was one procured from the sa dung-heap, after four days of dry weath following the heavy rain last mentione It was oozing out slowly in small quantit was of a dark-brown hue, nearly transp ent, and almost destitute of smell. Und the microscope, it exhibited a few particl and fibres, a very few minute crystal without any animalcules. I had expect to have found it a concentrated infusion the dung-heap, and, as such, of high sp cific gravity; but it was otherwise: specific gravity exceeded very little that the preceding, and was less than that the second portion, being only 1005, lea ing to the conclusion that the manure wa nearly exhausted of its soluble matter. The weather during the four days withou rain, was comparatively cold for the season (it was in September,) with a northerly wind—the thermometer even by day, below night once or twice approaching g point. This low temperature checked or put a stop to fermen- ich, in its turn, might have pre- e further formation of soluble The infusion mixed with lime he presence of ammoniacal salts; a pretty strong smell of ammo- judging from the effects of other its composition was very similar the preceding portions; it pro- tained a larger proportion of matter, humus and humic acid, earlier drainings; it gave a very ecipitate with the acetate of lead. g and application of these results uire to be pointed out. As the f the dung-heap exposed to rain me of the best—the chief ingre- ctive manure (excepting always le phosphates,) it follows, that he dung is exposed—the more it d to the washing and percolation ter—the greater must be its loss, and more exhausted it must nd that shelter from rain is es- prevention; such a shelter as e well secured by a shed, under manure, if too dry, may be ith the liquid that may have run ceived into a tank; and be sub- uch treatment, from admixture se, as has been found by experi- ly to render it more efficient. ults, moreover, I need hardly e perfectly in accordance with ience of intelligent farmers, in nces on record, of the extraor- ilising effects of irrigation with e washings and drainage of the and dung-heap.—*John Davy, the Edin. Phil. Journal.—The leside, Oct.* 12, 1844.

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AGRICULTURAL SOCIETY OF ENGLAND.

Council was held at the Society's Ianover-square, on the 12th ult.

PRIZE ESSAYS.—Mr. Pusey reported from the Journal Committee the decision of the Judges of Essays in three of the classes. The following result was announced:—

I. The Prize of 50 sovereigns for the best Report on the farming of Cornwall, awarded to Mr. W. F. Karkeek, veterinary surgeon, and Secretary of the Cornwall Agricultural Association, Truro.

II. The Prize of 50 sovereigns for the best Report on the Farming of Kent, awarded to Mr. George Buckland, Ramsden Farm, Benenden, near Cranbrook.

III. The Prize of 20 sovereigns for an account of the best experiment in Agriculture, awarded to Mr. John Hannam, of North Deighton, near Wetherby, Yorkshire, for his Essay entitled, "An Experimental Inquiry into the Theory of the Action, and the Practical Application of Bones as a manure for the Turnip crop."

FERTILITY OF LAND.—Mr. G. S. Barber, Secretary of the Stalham Farmers' Club, in Norfolk, communicated the following account:—"A field, belonging to a gentleman not a member of our Club, by its luxuriant appearance before the last harvest, attracted the attention of many persons in its neighbourhood, and several bets were made respecting the amount of its produce, which at harvest was cut and placed in a barn by itself. This amount, when threshed, was ascertained to be a fraction over 22 coombs, or 11 quarters per acre, of Wheat; and, in order that this might be placed beyond a doubt, the field has been twice measured since harvest. The same field is said to have produced some years since 17 coombs per acre of Wheat, and another field in its neighbourhood 20 coombs per acre.

WHITE BELGIAN CARROT.—Sir Charles Burrell, Bart., M. P., of Knepp Castle, near Horsham, Sussex, informed the Council that he attributed his growth of 1,600 bushels of White Carrots per acre last season (without including the green tops previously to carting away being severed from the Carrots, for feeding cows, &c.) principally in so dry a season as last year, to the effect of previous Pearson-plough drainage, as recommended by Mr. Hodges, and to the circumstance of the ground having been well prepared by spade husbandry. Sir Charles had always found the latter practice preferable to double-ploughing or subsoiling on heavy soils; for, in addition to an increase of crop, amounting by estimate to 300 bushels per acre, great benefit arose, in his opinion, to subsequent crops, by the good effect produced by that operation on the land.

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HIGHLAND SOCIETY.

A Monthly Meeting of this Society was held on the 5th ult. Sir George G. Suttie, Bart. of Preston-grange, in the chair. The first paper read was one which had been postponed from the previous meeting, and containing a description of a sub-soil plough used in Austrian Silesia, a model of which had been sent to the Society's Museum. Mr. Slight, Curator of Models, described the construction of the plough. Its working part simply consists of a pointed broad share of a hollow semi-ellipsoid form—a construction, as Mr. Slight observed, only adapted to one particular class of subsoils—the uniform alluvial clays and deep vegetable soils which abound in the continental plains, in reclaimed fens, and in our own more limited carses, in most of which few if any stones or boulders exist to obstruct the operation of such a form of share; but it is quite unsuited to the subsoils of our dry-field lands, or of lands where the moorland pan exists, inasmuch as it could not by any means be kept in the ground in these circumstances. Mr. Slight then read a few remarks on the effects produced on the subsoil by a thorough system of subsoil ploughing, such as were effected by the original inventor of the Miner, as the plough was then appropriately named, and is now effected by the introduction of the subsoil-plough, half a century afterwards, by Mr. Smith, of Deanston, and which has also been brought by him into its present high position as an improver of the soil. The objects obtained by these two inventors in the application of their ploughs were precisely the same—namely, the breaking up and stirring or moving the subsoil to a small extent latterally, detaching horizontally a prism of subsoil from its immediate substratum, without bringing it to the surface, and of intersecting at the same time, the prism in its longitudinal direction. To effect all these results by a simultaneous action, must, of necessity, require very considerable force, and the resistance to which is increased by the armature of the plough required to separate and break up, as well as move the prism of subsoil; and though the lateral movement may not exceed the extent of one or two inches, yet this being performed under the ordinary soil, already turned over by the common plough, it will readily appear that this process can only be produced in an effective manner by a commanding force of horse-power, and a strong implement. On account of this, its great efficacy, Mr. Slight considers the Deanstone subsoil-plough as the most perfect of its class; and as he conceives it really secures all the objects attainable by thorough subsoil-ploughing which are above enumerated, it appears to him to be too important an implement, to be sacrificed to less efficient ones, merely on the plea of any immediate saving, either in first cost or in manual or horse-labour. In consequence of some remarks being made on the great weight of the Deanstone subsoil-plough, Mr. Slight explained that it was made at first as heavy as 4 cwt.; but that providing the working part be kept at its original size and form, the weight of the upper part or beam might be reduced [illegible] cwt., without impairing the efficacy of the implement, which reduction of weight would have the effect of reducing the price from £3 to £

The next paper, On a method of preparing Potatoes for Seed, by Mr. Joseph Smeal, gardener to the Earl of Morton, at Dalmahoy, was read by Mr. J. H. Maxwell, younger, of Dangavel. The potatoes intended for seed are taken out of the ground by Mr. Smeal in the beginning of September, or earlier if the crop is sufficiently matured, and spread upon the surface of the ground, where they remain exposed to the sun and weather till such time as they become quite green in colour, and of a soft spongy consistence. This will be effected in the course of a month or six weeks, during which they must be turned at least once, and which can easily be done with a wooden rake. The greening process is much forwarded by sunshine, but it is desirable in all cases to have the potatoes lifted in sufficient time to allow the process to be completed before the frost sets in; though Mr. Smeal has observed, that potatoes so treated are less liable to be affected by frost than the others, or to be attacked by vermin and insects when stored, on account of the bitter, disagreeable taste they contract. The prepared potatoes may be stored in pits or houses in the usual way. The great advantage of this method of preparing seed potatoes, according to Mr. Smeal, is the certainty of a good and early crop.

The next paper was read by Sir James Ramsay, Bart., of Bamff, On the saving of Liquid Manure, by Mr. Gyde, of Painswick, in Gloucestershire, for which the Society had awarded o him the Silver Medal and three sovereigns. As this is a long and elaborated essay, and will no doubt appear hereafter in the Society's Transactions, and, as our space is nearly exausted, we can only take a short notice of it. Liquid manure does not require to be extolled t this time of day, as every farmer is already mpressed with the beneficial effects of its appliation to certain states of crop. It would appear om the statements of Mr. Gyde, made from Boussingault, that the quantity of urine voided nnually by man is 1000 lbs., by the horse also 000 lbs., and by the cow 13,000 lbs. It may em strange that man should void as much rine in a year as a horse, since the horse conumes 35 lbs. of water every twenty-four hours, d man only 3½ lbs. of liquid; but the explaation of the cause of this difference of function ough similarity of results is to be found in e extent of the skin and lungs in the horse, hich are capable of giving off large quantities f water in insensible perspiration. The cow nsumes 132 lbs. of water in the same time, d throwing off less perspiration, yields a much rger quantity of urine. The quantity of solid atter, organic and inorganic, in human urine, 806 parts in every 10,000; that of the cow 0 parts; that of the horse 600 parts; and at of the pig 740 parts; the urine of sheep t being taken into consideration, as they are pecies of stock which are not confined in fold rds, from which a supply of liquid manure n alone be obtained. By much the larger antity of organic matter obtained from urine urea, 100 parts of which ought to yield by ir decomposition 56½ parts of ammonia; and it be true what Liebig states, that "with every und of urine a pound of wheat might be proced, and with every pound of ammonia, which aporates, a loss of 60 lbs. of corn is sustained," estimate of the value of urine as a fertiliser land may be formed. Besides the organic, ine contains a large proportion of inorganic atter, such as potash, soda, phosphoric acid, c. It is those substances which render the ine of animals as valuable a manure as guano. order to put the value of liquid manure in a king point of view, Mr. Gyde takes the supsition of a farm which contains 50 head of ttle, 20 horses, and 60 pigs, and calculates t their urine would annually yield 22 tons cwt. of dry fertilising matter, which, at £10 n, the value of the best guano, would make um of £225 10s. Now, if it is assumed at three-fourths of liquid manure is wasted very year by bad management, 16 tons of dry fertilising matter will be lost from that number of animals, and if 3 cwt. of guano is sufficient to keep an acre of land in a state of fertility, it follows, according to this statement of Mr. Gyde, that the farmer loses the means of manuring no less than 105 acres of land on a farm that will support that number of stock.

Without pursuing the statistical part of the subject farther, and omitting the proofs which Mr. Gyde adduces of the fertilizing properties of urine on different sorts of crops, we shall only give some idea of his mode of constructing tanks for the collection and distribution of liquid manure. Let a site be fixed for the manure-tank on the north side, if convenient, and behind the buildings of the yard, the tank being made of brick, set in cement, or hydraulic mortar, and covered—the size to be regulated by the number of the stock usually kept in the sheds, byres, and stables. Into this tank all the urine from the stables, byres, and houses should be conveyed by drains. A channel should be made round the manure-heap, which should be close to the tank to collect the drainage from it to the tank. All the farm-buildings should have spouts so arranged that the water from them may be conveyed away by a drain, or allowed to run into the yard at will, and ultimately find its way into the tank. This may be accomplished by using a shifting spout over the drain; by so doing, the liquid manure will be diluted to any extent necessary before its application to the land. Let a pump be fixed over the tank, by which its contents can at any time be transferred to a liquid manure cart, or discharged by the use of a hose over the manure-heap. By such a contrivance, liquid manure may be collected and used at pleasure.

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NEW DRAINING TILE MACHINE.—A new hand draining tile machine has been constructed by Mr. Frederick Snowdon, of Diamond Hall Tilery, near Sunderland, by which draining tiles and pipes are manufactured of highly improved quality and mould, and better adapted for different kinds of draining work than any similar articles that have hitherto been in use. The machine is easily turned, very portable, and moves on wheels to allow it to pass through the alleys for the convenience of placing the work on the drying shelves, and it only requires a man and two boys to work it. The process is very quick and certain, and the work of the most complete description, the tiles having a sole, or fiat of considerable breadth and substance. The pipes made by this machine are of any size not exceeding 5 inches bore, and 900 feet per hour can be made. The tiles are 15 inches long, any size, not exceeding 4½ by 3 inches bore. It also makes equally perfect flats, used for draining swampy soils and bogs.—*A Correspondent.*

Reviews, &c.

On the Agriculture of Norfolk, by Barugh Almack, land agent.

The remarks in our last upon the subject of this report have procured for us the neat pamphlet in which form Mr. Almack has printed his work seemingly with a view to private circulation. We commend very much the spirit manifest throughout the whole of this very able exposition of the agriculture of the most highly cultivated county in England.

Norfolk since the early days of Coke has been celebrated for the skill of its farmers and the productive value of its farms. It is well known that before the time of that truly great man, wheat was not grown in sufficient quantities in the county to support its population, and that it was, in consequence, a corn *importing* county; that it now *exports* largely both wheat and barley to the London market, and that it sends annually to Smithfield some thousands of prime oxen, besides sheep, turkeys, and other "small deer," is equally well known. It being then apparent that to the late Earl of Leicester belongs the merit of showing how his county was to be made independent of the rest of the world, in reference to the productions of its soil, the question becomes, in a national point of view, of the greatest importance—*How was this great good effected?* The same means which have rendered one county independent may surely be adopted in all. Mr. Almack puts, in other words, the same question to himself, and thus answers it:—

> After a very careful investigation, I think I am justified in concluding, that the wh duct of this prince of landlords (M towards his tenants was founded on t principles :—
>
> 1st. That to induce a man to exe utmost such ability as he possesses, y show him that his doing so will be rew benefits to himself, and not merely who have no just claim to the exclusiv tages of the fruit of his labour; in oth to prompt men to great and extraord dustry, you must satisfy them, they s tainly be rewarded for their exertio least participating in those permanent ments which they alone have created.
>
> 2nd. That, in order to gain the adv first-rate talent, added to sufficient ca must not trust to chance, but hold advantages to attract and secure to those select men as tenants.

The foregoing conclusions we mend to the earnest consideratio landowners of England and Irel seek to improve, and not impove estates; who ask with much rea the rents of Scotland are so muc than those of England, and who otic enough to wish to see their co dependent of the world for all t ductions of the soil, for the g which their climate is suitable.

The result of such an earnest c tion as we would wish to see giv conclusions of Mr. Almack, woul many landlords as with Mr. Coke granting of leases for periods su long to enable tenants to "part those permanent improvements t have created."

Now, though advocates for th system, under proper restriction not however perceive the over necessity for long leases. Whe nent improvements are not w where there is no necessity fo lay for those purposes, a tenant appears to us quite sufficient. however, on the other hand, dra be performed,—hedges to be buildings erected,—roads mad short, where any necessity exists mediate outlay for the more c or for the profitable occupation of a farm, (as where it is much run out and impoverished from bad management)—that tenant is a foolish fellow who expends his capital and employs his skill to the manifest improvement of the estate, without having such a lease as shall enable him to secure the return of a fair proportion of his original outlay, as well as interest for it, and remuneration for his skill and labour,—he is simply not doing his duty to himself, which every man is as much bound to do, as he is to do his duty to his country. Mr. Almack so completely speaks our sentiments upon this interesting subject, that we do not hesitate to mark for extract the following:—

> A large proportion of the land in this country is owned by gentlemen who would not be guilty of intentionally ill-treating any one dependent on them, but who are unwilling to grant leases, so as to be left to the mercy of others—their feelings being, in many cases, powerfully acted on by agents for their estates, possessing no better idea of serving their employers, than a determination to prevent any tenant from obtaining more than the common rate of interest for money which he has expended to the permanent improvement of another person's land! To have land cultivated in the best possible manner, or in the way which is most beneficial to the community, you must, in the first place, find those who have capital and skill equal to their task; and, in the second, you must convince them, that their time, capital, and ability will not be misapplied. In short, if the land-owners would but once determine to make it consistent with common prudence for a good and clever tenant to lay out his capital on their estates, they would not have so much occasion o take the trouble of recommending high culivation; for every man likely to make a good nant well knows, that much money was never ade by low farming. If we enquire, we find almost every instance, where particular pares have made more profit by the cultivation land than their neighbours, under similar cirumstances, it has been owing, chiefly, to a dicious, but at the same time a more liberal, tlay of capital. There is nothing more certain an this, that in a country like ours, which is heavily taxed for the purposes of government d maintaining of the poor, *if land will not pay r high cultivation it will not pay for neglect.* overnment must be supported, and the poor ust be maintained; therefore, as long as the nd produces anything, that produce must be chargeable to these national claims. Besides which, *many of the direct expenses of cultivation are nearly the same, whether* that is *properly done or not;* consequently, any one of good sense, who reflects a moment, must see, that the extra capital, if judiciously applied, will generally be returned with the greater interest.
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> It is very well known, that after cattle have been feeding for a time, they increase in weight in a greater proportion for the food consumed, than they did at first. In their lean state, a large proportion of the food they took was requisite to support them and keep them in tolerable condition; but this demand having been satisfied, and the work of fattening once commenced, every little addition of a nutritious kind would operate with increased effect in favour of the object in view. So is it in the cultivation of land in this kingdom, and, I believe, even in a much larger degree than in the feeding of stock. The last few shillings per acre laid out may so increase the produce as to pay, on that last expense, a handsome per centage, whilst all previously laid out might be swallowed up by the common demands on the land, and thus pay no per centage at all.
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> Would we condense into one sentence that which best represents the general interest of Britain, it is the most perfect cultivation of its soil. Some persons may cavil at this, but few will distinctly deny it. At any rate, few, who reflect on the present circumstances of this country, will say, that the owner of land is not in duty bound to see as much labour employed on his estates, as possible, without positive loss to himself or his tenants. In this respect it is undeniable, that property has its duties, as well as its rights. It is evident, likewise, that by each land-owner seeing that everything was done on his estates likely to return 20s. and a fair interest for the pound, such an impetus would be given to the general trade and commerce of the kingdom, through all the various branches or channels along which this, the original, stream flowed, as would eventually return to the original movers of it an indirect but certain benefit. If these positions are well founded, it becomes a very important question, how an arrangement can be made between landlord and tenant, so that the former shall retain all his privileges, and the latter apply his capital, time, and energies with the greatest benefit to himself and the highest usefulness to the whole community? Leases have undoubtedly been more common in Norfolk than in many other counties; and it is quite as certain, that great and permanent improvement in the soil has generally been observed after their expiration.
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> Many landowners admit this, but say, how-

ever great improvements may be made for those who are to possess our estates a certain number of years hence, we should be paying dearly for them, by sacrificing in the meantime the power we have over our own property. This is a very important objection to leases, and it is well known that no amount of rent would tempt some landowners to grant a lease of a farm, especially if it were near the proprietor's residence: and, it must be confessed, there are few cases in which one could, without hesitation, recommend them to do so. It becomes, therefore, necessary to inquire into the principles of leases, and the nature of such objections as are raised against them, in order to our seeing whether we can, by any other means, secure the advantages to be derived from them, without drawbacks. Leases are recommended by some on the ground that they give a certain degree of security to the tenant for the capital he may choose to lay out on the land of another. But, besides the objection to them already named, they are objected to on this principle—as being binding on the landlord in times of high prices, but not on the tenant when agricultural produce is depreciated in value. This objection (of their not being binding on the tenants in times of low prices) is, I believe, seldom made by those possessing sufficient practical knowledge of cultivation to enable them to appreciate properly the great advantages of having a farm in high condition—which I suppose it would be if held under lease, or covenants of security to the tenants capital. Indeed, I would venture to submit, that if Great Britain were divided into three parts, and each let separately under one of the following agreements, all the land might be cultivated in the highest possible manner; for, although this division would allow each owner and each tenant to select the one agreement best suited to his own feelings, all would be so far founded on justice to the party who expended his capital for the improvement of the soil, as to insure the most liberal outlay of it.

1st. Leases.

2nd. Insert a clause in the lease granted, under which the owner should have the power to cancel it, on giving 18 months' notice, and paying to the tenant such sum as two arbitrators (one for each party) should think a fair compensation to the tenant for his permanent improvements, bearing in mind all the circumstances of the case affecting landlord or tenant.

3rd. By giving the tenant a clause, under an agreement as a yearly tenancy, by which he would be entitled to a fair and equitable allowance, for all permanent improvements made at *his expense*, but with the sanction of the owner, *on written notice* of such intended improvements *having* been given to the latter or his agent, and not having been answered within a given period, or in time to prevent that outlay which the owner of the land would not sanction.

I have known an instance in Lincolnshire in which some large farms were held by one person as yearly tenancies, but with a covenant similar to the last above suggested; and in 21 years the whole of the land was chalked, without costing the owner 6d. The tenant's rent had been gradually increased from time to time, so as to be nearly double what it was at the commencement; but, from the high state of cultivation into which the soil was brought, under the protection of the covenant alluded to, the tenant thought it judicious to submit to that increased rent, because he could afford to pay it; and I have little doubt he made much more money by his farms than he would have done had he held them during the whole period, at the original rent, without the covenant alluded to.

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Quarterly Journal of Agriculture, and the Transactions of the Highland and Agricultural Society of Scotland. Blackwood and Sons, Edinburgh and London. No. 7.

We have anxiously set before our readers, upon every occasion when an opportunity has offered, the result of experiments with special manures; and we have done so because we feel satisfied that there is much of a practical nature yet to be learnt upon the subject of those chemical relations, between plants and their food, as well as the various kinds of food for plants. There is much to be acquired in the way of confidence, and there are many vague theories to be abolished upon this important subject. The Scotch farmers have taken the lead in these enquiries, and with the aid of their "Chemistry Association," will no doubt continue in advance of their Southern Brethren on most points of economy in manures. The No. of the Transactions of the Highland Society now before us, gives the result of experiments by Mr. Robert Russell, of Easter Kilwhiss, by Auchtermuchty, Fifeshire, on clover, hay, oats, barley, turnips, and potatoes.—For the particulars of these we must refer our readers to the Journal itself; but the following General Remarks may with great propriety be transferred to our columns :—

As any attempt, on my part, to have given analyses of the various soils on which these experiments have been made, would have proved unsatisfactory, and could not have admitted of any practical application, it occurred to me that a description of the crops that grew upon them, and their general character, would be of more benefit. No doubt the analyses which have already been made by men of eminence, shews us the true direction in which we may obtain a knowledge of the particular wants of any soil, but these are far beyond the reach of the agriculturist; yet he can arrive at a knowledge of those wants, sufficient for every practical purpose, (provided there are no deleterious ingredients present,) by observing the actual and relative effect upon the different crops of specific substances, as if he had the soil completely analyzed before him. For instance, it may be very safely inferred, from the preceding experiments and following facts, that all these soils, (with two exceptions, Experiments II. and V.,) are very deficient in phosphoric acid; and any person to judge of their value as turnip land would be very much misled, for none would seem better adapted; but the very reverse is the case, as we find from experience that that crop cannot be cultivated with advantage or profit (which chemists tell us requires a considerable quantity of that material) without the addition of bone-manure, or some other containing the phosphates, to the farm-yard dung.

In an adjoining field to Experiment XI. of turnips, and to Experiment XII. on potatoes, of the same character, but hardly so close in texture, which was dressed only at the rate of [illegible] bushels of *bone-dust* per acre 13 years ago, it had lain, every alternate 12 yards, for some time previous to 1841, in waste pasture, a crop of oats were then taken, and turnips last year, manured at the rate of 10 loads of straw-yard dung of good quality. At the time the turnips were singled out, they all looked equally well; but latterly the old boned portions turned out a crop of turnips four times the bulk of the others, one-half of which were ate off with sheep during the winter of 1842-43, and sown in barley 2nd April. By the end of May, the old-boned portions were seen across the field, which had been laid down in broad ridges the reverse way, of a much healthier appearance. As the line of demarcation was very distinct at that time, I staked off four ends where the land was equal in quality, amounting to one-fourth acre of each kind. The crop was cut on the 2nd of September, and thrashed out on the 11th from the stook; *the straw was not weighed.*

No.	Descrptn. of Manure.	Prds. 1-4th Acre.		Scnds. on 1-4th Acre.	Wht. pr. bshl.	Prdc. per Acre.		Value of drsd. grain per Acre.		
		bsh.	lb.	lb.	lb.	bsh.	lb.	p·qr.	£	s.
1	..Old boned..	9	3......	10....	57..	36	14..	28s..	6	6
2	..Not boned..	7	50......	15....	56..	31	19..	27..	5	8

On the 1st of June the prospective difference of value of the crop on Nos. 1 and 2 was much greater than the results have actually turned out. No. 1 was then much thicker on the ground, having tillered out greatly. From the unretentive nature of the soil, the crops suffered much during the dry weather in June and beginning of July, more especially No. 1, which was too thick on the ground, and presented a smaller ear; No. 2 never had so good a colour as No. 1, but a good many green heads. On another portion of the same field, where none of the turnips were ate off, the difference of value was much greater. Another field of similar character to Experiment VIII. on turnips, was treated in the same manner as the above; and about the same time, also on the barley this season, the effects of the dressings were very visible as well as on the turnips and oats in the two former rotations; and before the field was broke up in 1841, the pasture was much better on the boned part, a change in some of the natural grasses having taken place, and the sheep always kept it comparatively short. Several other instances might be mentioned, which occurred in my experience, of a similar kind.

From these facts, it is obvious that the bone-dust has not been consuming in the soil at more than two bushels an acre per annum, and that, however small a constituent of those crops that proportion really is, it is capable of exerting an immense improvement upon them, and if it is a law in the constitution of some plants, that, to a certain extent, no other substance can take the place of the phosphates, which there is little reason to doubt, from the important place which it occupies in the animal economy, and the connexion which subsists between the animal and the vegetable kingdoms, is it to be wondered at, since the physiologist makes known to us that the bone must have its phosphate and the albumen its phosphorus, that these saline substances should have been attended with no better success, when constituents so essential as the phosphates exist in so sparing a quantity in the soil; and we naturally arrive at the conclusion that the nitrates, sulphates, &c., of alkaline or earthy bases, cannot be used economically upon soils which are deficient of phosphoric acid.

Action of Bone-Dust.—This is a subject upon which very few practical men agree, and a kind of prejudice is creeping in, in some quarters, against the use of this manure, which is partly encouraged by men of science, as is expressed by a writer on agricultural chemistry, that "bone manure acts more in the way of a stimulus, or rather it acts indirectly, by calling into activity the organic matter previously existing in the soil, and the constant use of bones deteriorates the soil."—(Dr. Madden, in the Quarterly Journal of Agriculture.) It is difficult to conceive how phosphate of lime can exert a decomposing effect on vegetable matter, when it rather acts as an antiseptic, on the associated animal matter of bones. From the facts already adduced, it is evident that a small quantity of what is generally applied is taken up by the crop; if half-inch bones are examined after a crop of turnips have grown from them, they seem to have suffered very little diminution in bulk; but nature is very economical in her workings, and in this case furnishes a beautiful instance of the power which vegetables possess of selecting those substances which are adapted for their particular wants. As soon as the roots of the turnips came in contact with the pieces of bone, they immediately entwine themselves around them, and form an integument of closely-matted fibres, completely excluding the action of the soil, unless in so far as it merely furnishes them with a supply of moisture, and any other materials in solution. The bones can thus exert no stimulating action on the soil, as they are completely shut up from it, and bone manure can only act by giving the plants the power or capacity to assimilate those materials which are *already* within the reach of the roots or leaves.

Action of Sulphate and Nitrate of Soda.—It cannot be a fair conclusion which is often drawn when certain substances are applied singly to any soil, and found to be negative in their effects. That they are of no use on that soil as fertilizers, the fault may lie in the want of other indispensable substances, in sufficient quantity to allow the plants to appropriate or make them subservient in assimilating or secreting any of its particular products. I know of an instance where nitrate of soda was applied to turnips, and had entirely failed on land somewhat similar to that on which these trials were made, and has since been condemned as quite worthless; but on reference to Experiments VII. and XI., on turnips, it appears that the absence of phosphate of lime was the direct cause of the negative effects of the sulphate of soda, as well as the nitrate of soda, and even on these soils, both these substances might be used with economy, by applying them in proper proportions along with others.

In regard to the method of testing the various artificial manures, little need be said, as those who are at all competent to undertake
that will best satisfy themselves by refere
any work on chemistry. *Dissolved bon*
best prepared by putting the common
dust through a wheat sieve, and throwi
powder into an iron vessel, with half its
of sulphuric acid, and the same quan
water, and, after standing a day, they
transferred to a wooden vessel, and mor
added, and allowed to macerate until
larger pieces of bones are soft; then tl
either be diluted with water and applie
land from a water-cart, or mixed with
mould, and sown over the land in the
soluble super-phosphate of lime. It
easily dried by mixing a little powder
amongst it; in this way it is reconvert
phosphate of lime. It was applied in th
to the tares and oats, in Experiment II
also IV. and V., and it answers very
old pasture. Its effects are very rapid
is not so well adapted for top-dressing
crops, as it is not so soluble. When
in this state, it should be put in along
seed, to allow the roots to act upon it
certainly promises to be a very valual
nure on those soils which are defic
phosphates.

There is in the same No. of the Tr
tions, the following, on the Iron Swi
or Bar, by Mr. JAMES SLIGHT, En
Edinburgh :—

The simple implement, the swing
draught-bar, which from time immemo
been constructed of wood, with or with
mounting, has, with the extension in th
cation of iron to a numerous variety
poses, in latter times, likewise felt the i
tion, and the swingtree is now to be
iron, as well as the plough, the harr
many other implements. The advant
iron for many of these purposes require
lustration; its great durability compar
wood for all exposed purposes, will cont
increase the number of cases to which
be applicable. In its application to the
tree we see a variety of forms, such a
low oval tube, a solid bar, differing onl
wood in its breadth and thickness, and
lately in the form of an elongated open l
the last being the nearest approach to a
construction that had then appeared.
five years ago, I was led into the consid
of the most proper form for a swingtree
and it is not difficult to trace the arrang
that will produce the greatest strength
given weight of material. This last elen
not so much a matter of shillings and pe
for the advantages which it affords of red
in weight; and to obtain the two leadin

e greatest strength with the least
e common truss, with *strut* and two
ies presents itself. But to give the
rigidity to a strut, it must either have
able quantity of matter in its mass,
the case of iron in a solid form,
the object here in view, become too
the strut must be so formed as to
large surface with correspondingly
of material. This may be obtained
s; it may be a tube, or it may be so
t its transverse section shall be in the
e sign +. For various reasons, the
most suitable and convenient for our
For the ties of a truss, such as is
red, the simple solid rod of malle-
s at once the best and most commo-

e foregoing principles in view, the
tree was constructed, and a model
he Society's Museum in 1839. In
of the swingtrees was exhibited at
l show at Dundee, when the silver
awarded for the invention.

ngtree of wood we can always guess at
of resistence, from experience, and
inspecting the quality of the mate-
ot so with iron; for though we can
as to what a certain thickness of iron,
ain circumstances, *ought* to be capa-
sting, yet we have not the same faci-
dging with certainty by simple in-
With this material, therefore, we
urse to the actual *test*, loading the
whatever it may be, to any pro-
it, and by so doing we arrive at a
tainty as to the strength of the appa-
sted, hence our dependence on such
truments is more secure than the
ss made at the strength of untested
r these reasons I test every swingtree
this improved construction, with a
in of five times that which it will be
in ordinary working.

olute weight of these iron swingtrees
verage, the same as those made of
when mounted with iron, or about
set of three, and their price 15s. per
about the same proportion higher
that an iron plough is higher than a
e. This new swingtree is now in
of a number of agriculturists, giving
isfaction.

ed hardly add a word of our own
subject. Those who have ever
from delay by a broken swing-
appreciate what Mr. Slight has
ithout our assistance.

The Veterinarian, March. London, Longman and Co.

It is indeed much to be regretted that gross ignorance often added to the most reprehensible parsimony is so frequently the cause of a large amount of animal pain and suffering. The domestic animals one would think are so completely the slaves of man, and so intimately connected with his well being and comfort in every rank of life that they, beyond all others of God's creatures of the lower grades, would be well and sufficiently tended—cared for, if not for their own sakes, at least for the money-value they bear amongst mankind, and fed with the most nutritious and healthful food, and when disease should happen to fall upon them, physiced and nursed with an anxious solicitude. It is, as we before remarked, very much to be regretted, not only for the sake of the poor creatures themselves, but for the sake of that humanity so strongly inculcated by Holy Writ, and so consonant to all one's better feelings. An honest man is merciful to his beast, a thrifty man is so to a certainty, and hence we cannot understand that absurd "penny wise and pound foolish" disposition which leads so many to deny to their domestic animals the attention it is no less our duty than it should be our inclination to bestow upon them. These reflections have been induced by the perusal of the following case which, though displaying no remarkable difficulty in its treatment and no extraordinary talent on the part of the practitioner, yet shows him well qualified as a humane man for the profession he belongs to:—

Unusually severe attack of difficulty of Swallowing in a Cow. By Mr. J. H. Shenton.

I take the liberty of forwarding to you the following case. I am induced to send it you, because I have not lately seen a similar one recorded; but it is a simple and very common case, and often shews the folly and bad policy of delaying to call in medical aid as soon after an accident has happened, or a disease has set in, as possible.

On Sunday the 12th of January, I was called upon professionally to attend a cow belonging to a very parsimonious sort of person. The servant who came informed me that she had been ill, and (to use his own words) plagued with sickness since the Tuesday before—that she would eat with greediness any thing they gave her, but whenever she swallowed hay or turnips she was immediately very sick, and with much trouble would throw it all up again. When, however, she ate any sloppy bran mash, or gruel, she did not show the same symptoms.

When I arrived, I found that what the servant had told me was true, for the cow was in a most pitiable state. She was a well bred and well made young beast, but brought down to the lowest possible state of condition.

The pulse was low and weak, the eyes dull and sunken, and the breathing accelerated. She was continually voiding small quantities of urine and fæces—had a staring coat—arched back—hide-bound—extremities cold—and continual discharge ot frothy saliva from the mouth.

The poor animal had been in this miserable state for five or six days, and the owner, in his mistaken notion of saving, had delayed to call in proper aid day after day, until the cow could scarcely stand. When I entered the shippen in which she was, I found her on her knees, apparently endeavouring to vomit up some obstructing body from the œsophagus. It was truly distressing to witness the painful state into which the poor animal was thrown.

Whenever she swallowed any solid food she could not be easy until it was returned, although she could without pain or other hindrance eat and swallow any thing sloppy, as bran mash, &c.

After patiently watching the various symptoms some time, it occurred to me that there must be some foreign and obstructing body, of a broad and flat form, wedged edgeways, as it were, at the narrow part of the œsophagus, or where that canal enters the thorax; that, when the beast ate any sloppy food, it passed by the obstruction and fell into the stomach in the natural way; but when she ate any solid food, such as hay, turnips, &c., she could not force it any farther on account of its bulky form, and thereby it acted as a total obstruction in the œsophagean canal.

This might be seen by the sudden inflation of the rumen, whenever the beast swallowed any hay, &c.; but the inflation of the rumen was reduced as soon as the cow had vomited what she had partially swallowed.

Upon inquiry, I found that the cow had on the same day eaten very geedily of some turnips *that had* been cut into slices by a young and *careless lad,* and who, probably, had not been *sufficiently* careful in cutting them small. I, therefore, sent for my probang, and immediately passed it down the œsophagus until it reached the entrance of the thorax, and there I found the obstruction I just before had predicted. By gentle and repeated pressure, however, the turnips soon gave way to the probang which I passed on into the stomach, and then withdrew it.

I now ordered an alterative and tonic drench to be given; but the parsimonious nature the owner would not allow it, therefore I desired him to give a dose of salt and water, feed her for a day or two on bran and a litt hay, and be careful in future about the cutti of the turnips.

I then remonstrated with him on the fol and bad policy of not applying sooner; for if had done so the cow would not have been duced so low, but would have been immedia relieved from the dreadful pain in which had been kept so long; and the whole was to traced to his sheer carelessness, neglect, mistaken notions of saving. The only reply made was, that he had done it to save expe and he never thought she was choked, would get better of herself. So, after cautioning him about the cutting of the tur &c., I left him. About two hours afterwar was called upon in great haste to visit the cow. When I arrived, I found that she was in the same state. I inquired what kin food they had been giving her, and I was formed that she had had some very small potatoes and grains, and was immedi choked when she began to swallow them. applied the probang again in the manner I previously done, and found the œsophag be obstructed in the same place as be With a little trouble I again relieved her of obstruction, and ordered another slight dos salt and water, along with a little ol. lini. A again giving strict orders as to her food, I her, and saw her again in a few days. She fast recovering her usual health and flesh.

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The Journal of the Royal Agricultural ciety of England. Vol. V., part II. Murray, London. (Second notice.)

Amongst the most practically useful pap in the present number of this journa that of Mr. Law Hodges, "*On the chea Method of making and burning Drai Tiles,*" to which Mr. Pusey has added excellent note. As draining has so v properly been described to be the first in agricultural improvement, we cannot etter than make known, as generally as ossible, Mr. Hodges' plan for rendering ile-making a domestic manufacture. He ives the following simple rules for making les, from the commencement of the oper- tions, under six points. Beginning with st. *point*, "*Working the clay*," Mr. Hodges rites:—

"All clay intended for working next season ust be dug in the winter, and the earlier the tter, so as to expose it as much as possible to ost and snow. Care must be taken if there are mall stones in it, to dig it in small spits, and st out the stones as much as possible, and also well mix the top and bottom of the bed of y together. It is almost impossible to give nute directions as to mixing clay with loam, with marl when necessary, for the better king it afterwards, as the difference of the ys in purity and tenacity is such as to require tinct management in this respect in various lities; but all the clay dug for tile-making require to be wheeled to the place where pug-mill is to work it; it must be there well ed and mixed in the spring, and properly ted, and finally spatted down and smoothed the spade, and the whole heap well covered litter to keep it moist and fit for use ugh the ensuing season of tile-making.

"2nd Point. Machine for making tiles.

"For the reasons already alluded to, I prefer cher's machine. Its simplicity of construc- , and the small amount of hand-labour re- red to work it, would alone recommend it; one man and three boys will turn out nearly 000 pipe tiles of one-inch bore in a day of hours, and so in proportion for pipes of a er diameter; but has the great advantage eing moveable, and those who work it draw long the shed in which the tiles are deposited drying previously to their being burnt: thus h tile is handled only once, for it is taken off machine by the little boys, who stand on h side, and at once placed in the rows on er side of the drying shed; thus rendering use of shelves in the sheds wholly unneces- y, for the tiles soon acquire a solidity to bear upon row of tiles until they reach the roof the sheds on either side; and they dry with- ping or losing their shape in any way.

"The price of this machine is £25: and it y be proper to add, that the machine makes very best roofing tiles that can be made, and less than half the price of those made by d, as well as being much lighter, and closer, straighter, in consequence of the pressure ugh the die.

"*In is necessary, in order to ensure the due* mixing of the clay, as well as to form it into the exact shape to fill the cylinders of the machine, to have a pug-mill. Messrs. Cottam and Hallen make these also, and charge £10 for them. This mill must be worked by a horse; in general one day's work at the mill will furnish rather more prepared clay than the machine will turn into tiles in two days.

"3rd Point. Sheds for drying.

"The sheds necessary for this system of tile-making will be of a temporary kind: strong hurdles pitched firmly in the ground in two parallel straight lines, 7 feet apart, will form the sides of the sheds, and the roof will be formed also of hurdles placed endways and tied together at the top, as well as to the upper slit of the hurdle, with strong tarred twine, forming the ridge of the roof exactly over the middle of the shed. They must then be lightly thatched with straw or heath, and the sharpness of this roof will effectually protect the tiles from rain. Two of these sheds, each 110 feet long, will keep one of the kilns hereafter described in full work.

"N.B.—These sheds should be so built as to have one end close to the pug-mill and the clay heap, only leaving just room for the horse to work the mill, and the other end near the kiln. Attention to this matter saves future labour, and therefore money.

"4th Point. Construction of kilns.

"The form of the clay-kiln is circular; 11 feet in diameter, and 7 feet high. It is wholly built of damp earth, rammed firmly together, and plastered inside and out with loam. The earth to form the walls is dug out round the base, leaving a circular trench about 4 feet wide and as many deep, into which the fire-holes of the kiln open. If wood be the fuel used, three fire-holes are sufficient; if coal, four will be needed. About 1200 common bricks are wanted to build these fire-holes and flues: if coal is used, rather fewer bricks will be wanted, but then some iron bars are necessary—six bars to each fire-hole.

"The earthen walls are 4 feet thick at the floor of the kiln, are 7 feet high, and tapering to the thickness of 2 feet at the top; this will determine the slope of the exterior face of the kiln. The inside of the wall is carried up perpendicularly, and the loam plastering inside becomes, after the first burning, like a brick wall. The kiln may be safely erected in March, or whenever the danger of injury from frost is over. After the summer use of it, it must be protected by faggots or litter against the wet and the frost of winter.

"A kiln of these dimensions will contain

47,000	1	inch bore pipe tiles.	
32,500	1¼	"	"
20,000	1½	"	"
12,000	2¼	"	"

and the last-mentioned size will hold the same number of the inch pipes inside of them, making therefore 24,800 of both sizes. In good weather this kiln can be filled, burnt, and discharged once every fortnight; and 15 kilns may be obtained in a good season, producing—

705,000	1	inch pipe tiles;	
Or, 487,500	1¼	„	„
Or, 300,000	1½	„	„

and so on in proportion for other sizes.

"N.B.—If a kiln of larger diameter be built, there must be more fire-holes, and additional shed room.

"5th Point. Cost of forming the establishment.

	£.
The price charged by Messrs Cottam and Hallen for the machine, with its compliment of dies is	25
Price of pug-mill	10
Cost of erecting kiln..............................	5
Cost of sheds, straw	10
	£50

The latter item presumes that the farmer has hurdles of his own.

"6th Point. Cost of tiles when ready for sale.

"As this must necessarily vary with the cost of fuel, rate of wages, easy or difficult clay for working, or other local peculiarities, I can only give the cost of tiles as I have ascertained it here according to our charges for fuel, wages, &c., &c. Our clay is strong, and has a mixture of stones in it, but the machine is adapted for working any clay when properly prepared.

"It requires 2 tons 5 cwt. of good coals to burn the above kiln full of tiles. Coals are charged here at 28s. per ton, or 1000 brush faggots will effect the same purpose, and cost the same money; of course some clays require more burning than others; the stronger the clay the less fuel required.

"The cost of making, the sale prices, and number of each sort that a waggon with 4 horses will carry, are as follows:—

	Cost.			Sale Price.	Waggon holds.
	s.	*d.*		*s.*	
1 inch pipe tiles	4	9	per 1000	12	8,000
1¼ „	6	0	„	14	7,000
1½ „	8	0	„	16	5,000
2¼ „	10	0	„	20	3,500
2½ „	12	0	„	24	3,000
Eliptical Tiles..............................				24	2,000
Soles..............................				10	

All these tiles exceed a foot in length when burnt."

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OUR TABLE.

THE CHEMISTRY OF ANIMAL AND VEGETABLE PHYSIOLOGY, &c., *part I., Blackwood and Sons, London and Edinburgh. Not being conversant with the Dutch language, we cannot say how far this may be a faithful translation, but it is neatly got up, and coming out under the auspices of Professor Johnston, will m be found a correct general exposition of of nature, in regard to animal and veget*

MESSRS. RANSOMES, *of Ipswich, h warded us their descriptive Catalogue, cellent wood cuts, representing the vari cultural Implements manufactured by th and*

MR. DEAN, *of Birmingham, has same. This mode of exhibiting to the several improved implements for both barn work, has great advantage over e hitherto adopted for that purpose; and recommend any of our friends in want work or machinery, to apply to the latt gentlemen for his catalogue, which will the requisite information as to capal price, as well as a faithful representat implements required. The same may Messrs. Ransome's book; and there i vantage in dealing with persons of standing which these gentlemen have viz. that no apprehensions need be ente having an inferior article, all their wor the most approved description.*

HISTORICAL AND PRACTICAL ACC PERUVIAN AND AFRICAN GUANO, FR TO 1845, WITH EXPERIMENTS AND M APPLICATION. *Published by John Cla Co. The importers of, and dealers i appear resolved that the British Farme err from a want of all the information fertilizer, which they are able to co which they so freely publish for his noticed in a late No. two works of a si racter to the present.*

THE VALE OF EVESHAM AGRIC SOCIETY *has forwarded us the form of lease, requesting our opinion. This have much pleasure in giving, when we a little leisure; in the mean time th collected by the society will no doubt be and we trust the means taken by this so insure the adoption of a form of lease at ficial to the tenant, and sufficiently pr the landlord to satisfy all reasonable req*

"GOOD." *By L. J. Hansard. A ve* got up phamphlet, under the above most

, proposes, so far as we have been able to ar- at the author's meaning, to re-establish a paper ency.

ow could we foresee that an abundant supply oney would not lead to speculative excesses and re panics, we should look favourably upon a n to a paper currency as a means of reducing value of money; for doubtless as the value of and labour is reduced, the value of money t also to come down, otherwise there will not at proper and equitable relation between pro- and its symbols which, in our opinion there t to be. There is a quaintness of style about Hansard's writing which, like a crabbed , fatigues the reader, yet we recommend our ciers to cast an eye upon Mr. Hansarsd' lu- tions

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NEWTON-IN-THE-WILLOWS

CULTURAL SOCIETY'S PLOUGHING MATCH.

(From a Correspondent.)

RE has lately been established an Agricul- Society at Newton-in-the-Willows, with ntention of promoting an improvement in ultivation of the land and stock on the es- of Thos. Legh, Esq., of Lyme Hall. The ct comprises the townships of Newton, ock, Golborn, Lowton, and Warrington, t part of which is the property of that man. The first practical movement of ociety was a ploughing match on the 27th on the Demense farm at Haydock Lodge, occupation of Charles Mott, Esq., the intendent of the Lunatic Asylum there, one of the vice-presidents of the society. competition was restricted to the tenants of Legh, Esq., who is the president of the y, and to plough either with the horses in file or abreast.

a little before ten o'clock ten ploughs d, several of which were Scotch ones, and by Scotchmen. Ten prizes were awarded, of which were carried off by Sawney. The shire Lads did not disgrace themselves; was very evident to the writer of this, that they had the same implements Sawney have come off with defeat or stood very in the scale *of prizes,* when the *time* was taken into consideration. The land (old ley) was in good condition for ploughing from the previous night's rain. The day was unfavorable in the morning and forenoon, but cleared up at noon, so that, in the afternoon, there was a considerable number of lookers on upon the field who seemed to take considerable interest in the work.

The judges were Mr. Wm. Rothwell, Winwick; Mr. Wm. Kerfoot, Winwick; and Mr. Isaac Clayton, Kenyon, who commenced inspecting the work after the ploughmen had finished their allotment of near half a statute acre each. After a careful inspection they were unanimous in awarding the prizes as follows:—

1st. To the owner, Mr. Muspratt, £1 15s.; Ploughman, Sandy Drummond, £1; time, 5h. 2m.
2nd. To the owner, Mr. Muspratt, £1 5s.; Ploughman, Wm. Drummond, 17s. 6d.; time, 5h. 50m.
3rd. To the owner, Mr. Jas. Lawton, £1; Ploughman, Geo. Wright, 15s.; time, 4h. 38m.
4th. To the owner, Mr. P. Worsley, sen., 17s.; Ploughman, Peter Worsley, jun., 10s.; time, 3h. 47m.
5th. To the owner, Mr. McDuff, 15s.; Ploughman, Duncan Christe, 7s. 6d.; time, 6h. 8m.

After the work was concluded the ploughmen, their masters, the judges, several gentlemen, and a considerable number of farmers sat down to a substantial dinner of roast beef and plum pudding, provided at the expense of Mr. Mott, who seemed to take very considerable interest in the proceedings of the day. Mr. Mott, of course, presided at his own board. The vice-chair was occupied by Mr. Mercer, the agent to Thos. Legh, Esq. After the cloth was removed the health of the Patron of the new-established Society (Thos. Legh, Esq.) was given from the chair, and in doing which he only did strict justice to that gentleman by saying he considered him one of the best landlords in the country. The company, in drinking this health, rose and gave three times three cheers in true old English style. Mr. Mercer, as his agent, returned thanks in proper terms, and explained the views, feelings, and motives of his employer in endeavouring to establish the Newton Agricultural Society, which were solely with a view to see his tenantry live and prosper upon his estate, and not from any self-interested views.

Mr. Mott's health was drunk, and the thanks of the company given to him, for the interest he had taken in the formation of the society, and in the proceedings of the day, and for the substantial dinner which they had just partaken of. In returning thanks he said he understood little of farming, but was desirous to get information on its various branches, as he was now engaged in that profession, and that he should do all in his power to promote the interest and welfare of the society.

The next toast was the health of the vice-chairman, Mr. Mercer, which was responded to by cheers from the company. In returning thanks he said he had entirely at heart the interest of the tenantry under his care, and nothing gave him greater pleasure than in doing what lay in his power to assist an industrious tenant, and to see him do well. In his opinion he already saw the good effects of the society on various parts of the property in the tenants endeavouring to be successful competitors for the prizes offered by the society, and to be awarded in autumn.

The health of the judges was next proposed, and Mr. Kerfoot returned thanks for himself and colleagues in appropriate terms, and remarked on the difficulty of pleasing all parties, and that it had been their desire to do strict justice in giving their awards.

The health of the successful competitors was drunk, and responded to by Mr. Bayne, the manager of Mr. Muspratt's farming concern.

Soon after the company departed in good temper and spirits, when the business of the day was concluded. The prizes were paid at the table to the different parties.

Horticulture, &c.

PYRUS (CYDONIA) JAPONICA. — Among hardy shrubs which flower in spring, this is particularly worthy of attention, especially when planted in the open border, and trained as a standard. If the plant you fix on for this purpose is one composed of a number of stems or branches rising from *the base*, clear them all away, except the *one which* you select for the future plant. This should be fastened to a stake, s or 8 ft. in height, according to the stren of the stem. Managed thus, the p being of a pendant habit, will acqui pyramidal form, which gives it a neat pearance. With respect to its propagat if a few roots, say from a ¼ of an inch an inch in circumference (or less will can be separated from the plant, let t be cut into short lengths of from 3 to 4 i Insert these round a pot, and cover t with a hand-glass; or lay them in a b under a south wall, in rows 4 inches a covering them slightly over with m Here they will make a short shoot i first season. Where a great quanti plants is wanted, this system is better increasing by suckers, as is generally d and in the case of the plant being luxuriant, the taking some of the from it will cause it to bloom more fi —*W. Swale.*—*Gard. Chro.*

PELARGONIUMS.—The following are varieties for showing:—Matilda, Ob Luna, Pulchellum, Symmetry, Cyru perb, Garth's Constellation, Foster's S Peel, Duke of Cornwall, Erectum, Chancellor, Rising Sun, Hodge's Co dore, Leila, Nestor, Unit, Beck's Sus Priory King, Annette, Queen of the F

ON DESTROYING THRIP.—Mr. J. B of Bicton, says, "I take a peck and a of soot, and put it into one hogshead o water, stirring it well with an old bro batten, every day for ten days or a fort I then strain off the water through a sieve, or piece of canvas, into another on a peck of charcoal, and drop in afterwards one or two lumps, or about t pounds of fresh lime; in about two after I strain it again, and it is then e enough to syringe any plant or plants w It will not only extirpate thrip, but m other troublesome insects also; and i famous liquor to syringe with, whether destroying insects or not, as it induces g eral vigour and healthiness amongst pl of all kinds."—Floricultural Cabinet.

FOR PEAS.—In sowing this vege-
nake use of a very simple instru-
piece of wood 18 inches long, 2
road, and 1 deep, is bored with
size to admit the largest Pea in
; the holes are 1 inch apart. A
elevated edge prevents any Pea
over the side that may slip from
ener's hand. Being marked in
e instrument also serves to set
distances between the rows. In
or sowing, a flat-bottomed drill is
ith the holes, the instrument
it, and a seed dropped into each
eing moved along, and the drop-
tinued until the entire line is com-
G. W. Johnson.

The Markets.

ice of WHEAT *has a general tendency*
n all parts of the kingdom. This arises
ral causes; foremost amongst them is
at stocks on hand are every where very
inished, the consumption having been
ring the past season than usual. The
ary late and severe frosts, too, have
speculation which will of itself, in a
ree, account for the activity of markets.
s for future imports are spoken of as
oreign shipping places; these are in-
come in on the approach of our harvests.
such speculations may turn out favour-
depend entirely upon the season. We
ge breadth under seed; but how the re-
be is quite a matter at present in the
time.

Y *is firm, although no disposition ap-*
iced at Mark Lane to offer better terms.
are a turn cheaper for provender, but
ling qualities are in request; 4s. per
e in some districts freely given.

is down again; the best does not re-
per lb., while coarse and inferior beasts
w as 3d.

ON *has still the turn in its favour,*
e quote it fully a halfpenny per pound
than last month.

may be had as low as 18s. each, but
best do not fetch 7s. per quarter; this
t the season, and the price of mutton, is
y cheap.

The Liverpool WOOL *market is in an active state, upwards of* 10,000 *bales foreign have been received this year, still stocks are light and holders firm.*

HOPS *are quiet, and the trade represented as in a healthy state; stocks of old having been pretty well cleared off, there is not much room for speculation.*

HAY *is not in general quoted high; by auction, in this neighbourhood, £5 to £6 per ton is the rule.*

STRAW *is, however, briskly enquired after.*

LONDON, Mar. 24.		Per	Qr.
WHEAT, Essex and Kent, new, red		46	48
White	46	50	55
White, old		52	57
RYE, old		30	34
New		36	—
BARLEY, Grinding		27	30
Malting		33	34
Chevalier		35	—
Irish		26	28
Bere		26	—
MALT, Suffolk and Norfolk		58	63
Brown		56	60
Kingston and Ware		60	—
Chevalier		65	—
OATS, Yorksh. & Lincolnsh., feed		22	23
Potatoe		23	24
Youghall and Cork black		20	21
Cork, white		21	22
Dublin		21	22
Black		20	21
Scotch feed		22	23
Potatoe		23	24
Limerick	22	23	24
BEANS, Tick, new		34	36
Old, small		38	40
PEAS, Grey		34	36
Maple		35	36
White		33	35
Boilers		36	38

SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..30 38 Odessa..43
Mustard, White......12 15
Brown ....10 12 per bush.
FLOUR, Town-made 42 —
Suffolk.... 32 34 per sk. of 280 lbs.
Stockton and Norfolk 32 34

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		32	36
Hamburgh		30	32
Rostock		30	—
BARLEY		20	24
OATS, Brew		17	18
Feed		15	17
BEANS	—	24	29

PEAS	28	32
FLOUR, American, per barrel	19	—
Baltic	18	—

LONDON AVERAGES.

			£.	s.	d.
Wheat	6532	qrs.	2	8	5
Barley	3413		1	12	5
Oats	26410		1	1	11
Beans	4		1	12	0
Peas	1551		1	12	7
Rye			1	15	8

SEED MARKET.

	s.		s.
Canary, per qr.	46	to	48
Carraway, per cwt.	44	to	46
Clover, red, English	50	to	58
„ „ Foreign	45	to	55
„ white, English	65	to	66
„ „ Foreign	55	to	65
Coriander	12	to	18
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000	£11	to	£11 5s.
„ „ Foreign, p. ton	£8 15s.	to	£9 5
Mustard, white, per bushel	12	to	14
„ superfine „	—	to	—
„ brown „	8	to	12
Rapeseed, English, per last	£24	to	26
Tares, English, spring p. bushel.	6s 6d	to	7 6
Foreign „ „ „	—	to	—

LIVERPOOL, Mar. 25.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ꝑ 70lbs.	7	3	7	8
Ditto, red	6	10	7	3
Irish white, new	6	10	7	2
Egyptian	5	9	6	0
Oats, Eng. mealing, ꝑ 45lbs.	3	0	3	9
Irish	2	11	3	0
Welsh	2	9	2	11
Barley, Eng. malting ꝑ imp. qr.	34	0	36	0
Grinding	0	0	0	0
Irish and Scotch	4	3	4	8
Rye, per imp. qr.	32	0	34	0
Beans, English, per imp. qr.	36	0	40	0
Irish and Scotch	34	0	38	0
Foreign	38	0	40	0
Egyptian, per 480lbs.	32	0	33	0
Peas, English, per imp. qr.	38	0	40	0
Foreign	36	0	38	0
Malt, per imp. qr., fine	60	0	62	0
Flour, English, per 280lbs.	36	0	39	0
Irish	35	0	38	0
Foreign, duty-paid, per 190lbs., U.S.	26	0	28	0
Canadian	26	0	27	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	24	6	25	0
Irish	24	0	24	3
Indian Corn, per 480lbs.	27	0	30	0

PRICE OF AGRICULTURAL PROD

LIVERPOOL, Mar. 25.

			Potatoes.
Hay, best	1s	1d	Short tops....
Clover ditto	0	0	Red apple....
Green ditto	0	0	Cups........
Vetches	0	0	Cattle ......
Straw.			
Wheat	0	6½	Turnips pr ton2
Oat	0	7	Carrots......3
Barley	0	0	Mangle ....

Cattle Markets.

LONDON, SMITHFIELD.

Mar. 24, 1845.	ꝑ st. oi		
	s.	d.	
Inferior coarse beasts	2	6	tc
Second quality do.	3	0	tc
Prime large Oxen	3	4	tc
Prime Scots, &c.	3	8	to
Coarse and inferior Sheep	2	10	tc
Second quality do.	3	8	tc
Prime coarse woolled do	4	0	to
Prime Southdown do	4	4	tc
Large coarse calves	3	10	tc
Prime small do	4	10	tc
Large Hogs	3	0	tc
Neat small Porkers	3	10	tc

LIVERPOOL, Feb. 24.

	s.	d.
Beef, per ℔.	0	5½
Mutton	0	6½
Lamb	0	0

MANURES.

Subjoined are the prices of several s of manure :—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. per c
Guano, 10s. to 12s. per cwt., accordi quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. pe landed and housed, 38s. to 42s. per
Nitrate of Soda, 16s. 0d. (duty pd.) per c
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per p sufficient for three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 6s. per cwt.
Compost, £3. 12s. 6d. per hhd. sufficien three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphuric Acid, 1½d. per ℔.
Sulphur for Destroying Worm on Turnips, per cwt.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

MAY—1845.

ive in another column a full account
more than usually important meeting
e council of the Royal Agricultural
ty. Its importance arises from the
that at it were read communications
two subjects certainly of the greatest
quence to agriculture at the present
viz., the economical application of
s dissolved in sulphuric acid, and the
ed cost of drain tiles. We have been
e habit, when asked what first step
ld be taken to ensure fertility upon the
rity of soils in this country, of reply-
"thorough drain,"—and when asked
e second step, to reply, "use bones."
e then the cost of our two first steps
uch reduced as to be within the reach
en the smallest farmer, does indeed
e us, not only on account of the ad-
ge to be derived to our brother far-
, as a class, but also on account of the
ally and greatly increased amount of
roductions of our common country.

◆

RNT CLAY AS A FERTILIZER.

NGLY impressed with the conviction
the clay soils of Cheshire may, after
tual drainage, be cheaply and ama-
y improved by burning, we have made
y enquiries as to the extent of such a
tice, and *we find, with scarcely an ex-*
n, that wherever it has been tried it has been invariably condemned as worse than bad; for it is said to be *ruinous*—rendering the fields which had been subject to it perfectly barren after the first crop.

Now with great deference to the gentlemen who have made these sweeping condemnations, we would urge that *their* burning was not properly performed, and that they not only erred in the unskilful application of fire, but also in burning the *sod* from the *whole* field, a proceeding by no means to be had recourse to unless couch grass shall have obtained such an ascendancy as not to be entirely removable by any less positive means. If a piece of pasture be pared and burnt according to the ancient practice you destroy at once, and for the sake of one perhaps extraordinary crop the food for *several;* as it is well known the organic matter contained in an *old* sod will remain slowly decomposing for two or three or even more years, affording sufficient nourishment to potatoes or turnips—wheat and oats, with clover and grasses, without other aid, except to the young seeds,—whilst if pared and burnt, particularly if unskilfully performed, nothing but inorganic fertilizing matter is left in the soil, and left too in a state which one heavy crop will effectually exhaust.

Now the organic matter in the soil, useful to vegetation, which has been destroy ed by fire, its substances being reduced to their inorganic constituents, and upon which the first crop applied to the soil will prey till it is entirely consumed, can only be effectually reproduced by two methods —one, the slow course of nature which will gradually restore it; the other, the application of animal manures to an extent sufficient to effect the purpose.

The practice then of paring and burning after the ancient custom, being generally condemned for the above reasons, it becomes interesting to enquire how far burning at all may be had recourse to. The beneficial action of fire upon clay has been many times explained by various writers, and all insist upon the importance of skill and care in its application, for it is admitted on all hands that if your clay be burnt *red*, or brick-like in appearance, you do not take much by your labour; the great art being to let the clay burn slowly, in a *close fire*, (by no means permitting it to blaze out,) which will have the effect of rendering its colour *black*. Messrs. Payen and Boussingault have taken a more enlarged and scientific view of paring and burning than any of their predecessors. "The favourable influence of paring and burning *(ecobuage)* on compact soils abundant in vegetable remains, appears to consist—1, in the destruction of suberabundant organic refuse very poor in azote; 2, in the conversion of the upper layer of soil into a carbonaceous absorbent earth, capable of retaining part of the ammoniacal vapours disengaged during calcination, of promoting percolation of water, of moderating the decomposition of organic parts of the manure, and condensing the azotised gases produced during its fermentation; 3, in the conversion of vegetable salts into carbonates, capable of exerting an alkaline agency conducive to the growth of plants."—*(Annales de Chimie et de Physique.)* "These *conditions*," says M. Boussingault, "are so *exactly* those which appear to be realised *in paring* and burning, that to produce a favourable effect on the soil, it is of the first necessity for the vegetable matter to be converted into black ashes; and, as Mr. Robert Hoblyn has very well remarked, when the combustion is complete, and there is nothing left but a reddish ash, the soil may be smitten with perpetual sterility."—*(Economie Rurale.)* On which a recent writer observes:—"We may now conclude that *black ashes* are, on every account, the grand desideratum to be kept i view, when we attempt the improvement lands by burning. Now, the black colou can be communicated solely by charco or carbon, the distinguishing element organic bodies. It is not denied that man inorganic matters, when subjected to he possess some degree of absorbent, decolo ing and disinfecting powers; but these a much enhanced by the presence of fine divided carbon. Thus, bone earth see as necessary as carbonaceous matter it to the constitution of that bone blac which, whether for agricultural or oth industrial purposes possesses such very r markable and useful properties. Clay a calcareous earth when impregnated wi carbon, exert a power somewhat simil though inferior, to that of bone charc itself, and having been resorted to in oth arts, may also be made available in ag culture. Yet, after all, it is the fine divided black powder, the carbonac ous matter, either vegetable or anim —the latter being far more powerful whose properties, modified by fire and mixture with cheaper substances, are most worthy of patient investigation."

As some considerable portion of most the clay farms in Cheshire does not b a soil of more than three or four inch upon marl, the application of which in usual mode of carting out and spreading its raw state is expensive, the question comes most important how far we can prove the texture of the soil, at the s time stimulate the growth of plants, by t application of charred marl, and wh

uch system can be pursued at a less ex-
ensive rate than the present system en-
ails upon us. There is no doubt that the
ressing of hedges and rough banks, with
he cleansing of ditches, will, if properly
urnt together, produce a fertilizing mass
f the greatest value; to these marl may
e added, and our conviction is, as we
efore observed, that by such means,
ded by efficient drainage, the thin poor
ils of Cheshire may be improved to an
tent scarcely credible. The question of
pense is, of course, a matter for further
nsideration and calculation.

What we would now urge upon our bro-
r farmers, in those cases where a poor
n soil rests upon clay, is this—that the
sing of their hedges and lopping of trees
re they can be obtained, should, with
aid of refuse coal or *slack*, as it is com-
ly called, be applied to the purpose of
ning ditchings, rough ditch banks and
, care being taken that the fire-heap is
onstructed, that it shall not burn or blaze
but with a close smothering fire effectu-
char the whole mass, except, perhaps,
coating of soil, with which, on all oc-
ons, the heap should be enclosed; when
fire has exhausted itself, the heap may,
propriety, be allowed to lie together
some days to cool a little, it should be
turned over and allowed to lie, if
ted for grass lands or for the formation
omposts, for which latter purpose its
rbent qualities render it peculiarly
pted; if, however, it is to be applied to
ge land, cart it upon your fallows the
ent it can be done with safety, and
h it under.

◆

PLOUGHS AND PLOUGHING.

loughing matches are the order of the
at present, and as ploughing is an im-
nt operation in the business of an
le farmer, I beg to offer a few remarks
loughs and ploughing. Considerable
attention has lately been paid to this
the *counties of Lancashire and Cheshire*, than was some years ago, no doubt in consequence of these matches.

It is now very clear, to most ploughmen and farmers who have attended the various ploughing matches in both counties, that the common ploughs of the country cannot compete with the Scotch ploughs, however good the workmen may be by whose hands they are guided. I have often seen the best workmen beaten from no fault but the make of the plough. This was the case at the match which took place at Haydock Lodge on the 27th March.

However, in my opinion, although the present Scotch ploughs carry away most of the prizes at the various matches, they are defective. In the present make of Scotch ploughs the *beauty* of the work performed is more considered than *real utility*. The common ploughs of the country cut an *obtuse angle* on the furrow when turned up, which is a *real defect*, both as to the labour of harrowing and the covering of the seed. The turf or grass is seldom covered in very well. On the contrary the present Scotch ploughs cut a very *acute angle* on the furrow, which makes the work look better, and will be sooner harrowed than if the angle of the furrow be a *right angled one.* This easy harrowing is the only advantage over the furrow cut at right angles to the surface of the land. The seed will be no deeper or better covered, and the ploughing is done at a greater expence of both manual and horse labour, than when the furrow is cut perfectly square, or rather, I should say, a perfect parallelogram, (as a furrow must be broader than deep.) It is evident the present Scotch ploughs are not very easy to hold, and whenever this is the case the labour to the horses is increased. The common ploughs of the country are generally neither easy for horse or man, and make bad work. The present Scotch ploughs are more difficult to hold, and make *no better work* than the Scotch ploughs made twenty or thirty years ago; that is, the *improved* Scotch ploughs of those days, for the unimproved ones were as clumsy implements as could be conceived, and yet there are farmers in some parts of Scotland who say they got better crops with those ploughs than with those of the present make.

Thirty-two years ago I imported a Scotch plough, made by one James Vitch, of Jedburg, Roxburgshire, called "Small's improved Scotch plough." Since then I have rambled over a great portion of both England and Scotland, and have held ploughs of almost every make, but never found any equal to it, and all of the same make, for easy draft, easy to hold, and for quality of work they were capable of doing. The bottom, or sole, was concave. Lay a rule upon the sole and the centre between the point of the sock and the heel of the plough would not touch the rule by three inches. There are several advantages in this. First, the friction is very much reduced. Second, the sole, or bottom, never gets *convex* by wear. A plough always wears the fastest at the point of the sock and the heel of the plough, consequently if a plough be made level at bottom, when new or new repaired the bottom soon gets convex by wear, and of course unsteady to hold. Again, when the point of the sock strikes against a stone, *above its centre*, the sock will rise over the stone, and if the bottom of the plough be level, or convex, it has a tendency to be thrown out; but if concave the stone gives no inconvenience to the ploughman.

Small's improved plough had only one fault. This was, that the breast part of the mould board was too flat. This was no inconvenience, but rather an advantage, when the soil was dry, but with a damp soil it did not clear itself sufficiently. This defect has been remedied in the new Scotch ploughs, but they have all, according to *my* opinion, added other defects, which *more than* counterbalance that. The heel of Small's plough was only eight inches behind where the sheath is inserted in the beam of the plough, which gave the ploughman great command over it.

I had intended making a few rer
here on ploughing, but I find I an
croaching too much on your room
shall defer doing so till another op
nity.—*W. Rothwell, Winwick, March*

◆

CARBONIC ACID GAS.

(REPLIES.)

A correspondent, E. M. I., in the last
ber of the Farmers' Herald, enquire
becomes of the increased quantity
bonic acid gas, produced in winter
increase of combustion, when ther
vegetation to consume it? He forge
winter occupies only half the glob
time. It remains, however, *to be*
that this gas is produced more abun
in winter than in summer. The sola
of summer is probably more than e
lent to the fire-grates of winter in pro
it. But, be this as it may, it is quite e
that the action of winds and storr
perses the gas to every corner of the
preventing any undue accumulation
or deficiency there. If there were t
stormy winds, Manchester, where E.
dates his letter, would become uni
table.—*A member of the Ruyton Fa*
Club.—Ruyton, April 5, 1845.

◆

Your querist, E. M. I. will find the
of the composition of the atmospher
treated, and in a very interesting a
structive manner, in a work, the first
of which has just appeared, Mülder's
mistry of Vegetable and Animal
ology, translated from the Dutch.
difficulty he proposes, as to carbonic
gas, is there considered in its most i
tant relations. Water, in the form of
is the great purifier of the atmosph
it mainly prevents accumulation of
noxious gas in the atmosphere, whil
ceaseless agitation of the air preven
accumulation in any particular spot
generated. According to the expe
of Dr. Saussure, there is less carb

the atmosphere in winter than in sum- r, which may be owing to there being n more rain, and less putrefaction and minished decomposition of vegetable tter.—*D.*

◆

HAVE much pleasure in answering the ery of your correspondent, E. M. I. The mosphere contains a constant quantity of rbonic acid—the precise proportion is not curately defined, although a thousandth t or one-tenth per cent. is that generally itted by chemists in all parts of the ld, as near enough for every useful pur- e. *This* is the source of the carbon inated by plants, according to Liebig others. The carbonic acid produced combustion bears a very small propor- indeed to the carbonic acid of the osphere: it is, however, one of the rces from which any deficiency created the atmospheric proportions by the wth of plants is supplied. When the t is in the shade, or during the night, constantly absorbing carbonic acid n the atmosphere. As soon as the rays he sun fall upon the leaves of the plant, carbonic acid is decomposed—the car- being appropriated by the plant and oxygen given off. Thus hot, tropical mates are a fruitful and inexhaustable rce of oxygen,—cold and temperate es that of carbonic acid. "The same am of air, which moves by the revolu- of the earth from the equator to the , brings to us in its passage from the tor, the oxygen generated there, *and ies away the carbonic acid formed during winter.*"—(*Liebig. Chemistry of Agri- re, &c. 1st edit. p. 24, et ante.*)—*C. R.* , *Stowmarket, Suffolk.*—P. S. There is ear of our atmosphere ever becoming holesome by the accumulation of car- ic acid, because according to the pre- ing laws of nature the vegetation of the ace is quite sufficient to keep it pure. ring the deposit of the coal strata, geolo- s infer, from the *absence of land* animals and the least preponderance of luxuriant vegetation, that the atmosphere was irrespirable by animals on the surface of the earth, by reason of an excess of carbonic acid.

◆

ON THE CULTURE AND PRESERVATION OF THE POTATO.

THE failure in the above important root has become very general, but its cause is still involved in difficulty, and I approach the subject with diffidence. But it is only by communicating our ideas to each other, that facts will be accumulated, out of which something practically useful may be extracted. From extensive observation and practical experience, I find that early planting is a great preventive against failure. Thorough-draining where required—there being little of the surface of an island, or Great Britain and Ireland, that does not require it—and deep-working all soils, is of the first importance, as it admits a free current of air, and enables the fibres of plants to perambulate the soil with ease in search of food. Where this has been attended to at the proper season—in the end of autumn—it will be easy to get the land early in order for the reception of the potato, which should be all planted before the end of April, when the land is moist, and the bud of the potato in a natural state first appears. As the early planting will not permit of a thorough pulverization of the land in spring before the potato has been planted, the width between the drills should be from 30 to 32 inches, to admit the soil being well grubbed and pulverized betwixt the rows. I would recommend that the drills be made a good depth; the dung—which should be moist and well made, by being regularly saturated with the liquid manure—then placed in the drill, and a little soil drawn from the top of the drill to blind the manure before the sets are placed on it—we have found it an excellent plan, it is a more natural element for the potato set, and it can be done with a rake or brush harrow, close behind the spreaders—the whole should be covered as soon as possible with the plough. Employ careful persons to select the seed; lay aside all that have been injured in any manner; never make more than two sets of a potato; cut off the root end, and lay it aside for other purposes, and then split the remainder into halves, so as to have a part of the rose, mole, or eye-end in each set. Immediately after cutting, dust the sets with a little gypsum, or quick-lime; it helps to prevent the attacks of insects, and whether dusted or not, allow them to remain before planting two or three days, in a cool shaded part, quite thin spread upon the floor.

It has been the general practice, for a good number of years back, to get seed from the higher districts of the county—confirming the opinion, that the less ripe potatoes are they make the better seed—these are failing now also; no doubt, in a great measure, from their not being properly kept in the pit or bin. Every farmer can raise and secure a quantity for seed before they are ripe, when some of the shaws or haulm are beginning to wither, and have them put in a narrow pit, two-and-a-half feet wide at the bottom, with what will heap on that base—a little earth mixed amongst them—covered with it next to the potatoes, and well thatched with straw; and, besides, run a drain tile along the bottom of the pit, open at both extremities, with some cross ones through the middle of the pit, about ten feet apart, to secure ventilation. The green ones, or those with a green side, that are on the top of the drills, have been highly recommended by practical men for seed—I got them collected last autumn, and a number of my neighbours advised to do so; those first gathered have kept well, while the others in the same pit have spoiled a good *deal: showing the necessity of having them early collected*, as the least frost will de*stroy them for* seed. It has been also ad*vised to* have a quantity greened for seed, by exposure to the sun and weather;
this will occupy from a month to six wee
and the risk of frost is so great that it i
dangerous experiment on a large sc
but a few may be exposed in this w
and those with a green side on the to
the drills may be increased, by expo
more of them while growing, and
seed strengthened by being grown
these. Proper ventilation of the po
pits or heaps must be attended to, whe
for seed or general use; where drain
are not plenty, two boards placed
against the other, in the form of a tria
or, as you have seen on the rigging
house, will suit very well, for placing
and through the pits to give a free cu
of air, so essential to their preserva
When a change of seed is desirabl
would be advisable that the farmer o
manager, should inspect the pits from w
they are intended to be taken, to asce
how they have been kept. In treatin
subject of *the culture and preservation*
potato, I have merely endeavoured t
down some practical facts—not being
mist enough to enter theoretically or s
tifically into the disease, I leave it fo
vestigation in the laboratory. The H
land and Agricultural Society, with
wonted liberality, have offered a large
mium for the best scientific investigati
the disease in the potato, which will
the attention of our best chemists to
important subject.—*William Ewing,*
geath, Muthill, Crieff, Perthshire, April

◆

WHAT IS THE FERTILIZING P PERTY OF BONES?

INASMUCH as this question, from the g
utility of bones as manure, has become
of no ordinary interest, it is highly de
able that a solution of it should be fou
in order to enable the agriculturist to ec
omise where is possible, and to ju
somewhat more accurately than he ca
at present, when a dressing of this w

be advantageous to his land. Nu-
theories have been started with
w, but they will all be found to
themselves into two general ones,
at which attributes the utility of
o the animal matter or gelatine
ed in them, and that which avers
eir fertilizing principle is the phos-
f lime and other earthy matters
form so large a proportion of their
ation.

y be well, therefore, if we examine
into these theories, since of course,
be satisfactory, further remark will
ecessary; and first then we will
r how far it is probable that gelatine
rtilizing property of bones. Now,
e seen at a glance that gelatine, as
, can afford no nutriment to plants,
ants cannot make use of ready made
which they are able to form them-
The only way in which gelatine
rcise any beneficial influence is by
gen, and a great part of this is
y rendered useless during winter
tilization being converted into a
salt of ammonia before it is used by
t.

gelatine be the fertilizing principle
, of course those bones possessing
e largest measure should form the
nure, and should be the soonest in
nd the most vigorous and produc-
Now, as unboiled bones consist of
phosphates and 45% of gelatine
oiled bones (the animal being ab-
by boiling) are composed almost
of phosphates this point may be
into the enquiry, "Whether do
r unboiled bones answer best as
?" Boiled bones will often commence
ction immediately on application
nboiled bones frequently produce
t on the crops for the first year and
t gradually; thus showing a *decided*
ty in those bones which *contain* the
matter.

supposing this theory correct pure animal matter, or rather size, should be as useful as bones, but I am not aware that any one would recommend its employment as manure. We see, therefore, that of whatever advantage gelatine may be as a secondary agent, by supplying nitrogen or ammonia to the plants by decomposition, it cannot be the *main principle* which gives to bones their extraordinary power.

The second theory we have mentioned is that not gelatine but phosphates must be regarded as the virtue of bones; and this is worthy of consideration. That plants require and consume large quantities of phosphates is abundantly proved by the fact that a crop of wheat removes from 30 to 40 lbs. per acre of them. Any artificial means of supplying them, therefore, to soils destitute of them must be a great and permanent benefit, and such a supply will bones afford. In a report of a course of lectures delivered to the tenants of Mr. Davenport's estate at Siddington, I find the following analysis of the soil of that part of Cheshire:—

No. 1.—*A loamy surface soil from Henbury contained in* 100 *grains*—

Silica	72 75
Alumina	12·75
Red Ox. Iron	2·5
Magnesia	0·6
Potash	0 25
Sulphuric Ac.	0·10
Phosphoric „	0·45
Salt	traces.
Sulp. Lime	traces.
Organ. Mat.	8·00
Moisture	2 00
	99 60
Loss in 100 grains	·40
	100·00

No. 2.—*This analysis includes two soils, one from Marton, and the other from Siddington:*—

Silica	83·000
Red Ox. Iron	3·000
Alumina	2·500
Magnesia	·270
Potash	·025
Manganese	traces.
Phosphoric Ac.	·170
Organ Matt.	10·000
Water	1·000
	99·765

No. 3.—*A soil from Siddington contained in* 100 *grains*—

Silica	73·00
Red Ox Iron	3·75
Alumina	2·50
Carb. Lime	5·00
Magnesia	traces.
Potash	
Gypsum	
Phosphoric Ac.	
Water	7·5
Organ. Matt.	7·5
	99·25
Loss in 100 grains	·75
	100·00

From these analyses it will be seen that the principal defects in these soils is the want of phosphates, and this want is to be supplied by bones. The soil of the county generally will, in like manner, be found to be deficient in phosphates. In Cheshire, therefore, the earthy parts of bones are of great importance as they afford a remedy for this prime defect. To return, however, to the former argument of the superiority of boiled over unboiled bones: as we have seen that boiled bones consist almost wholly of phosphates, and have also seen their greater promptitude and vigour in action, we are at all events justified in arguing that though the phosphates contained in bones be not the main principle sought, yet they are beyond doubt a highly important fertilising agent. But it may be asked, as was done with regard to the first theory, "Will pure phosphates manure as well as bones?" Undoubtedly, to soils requiring them, the supply of phosphates in any form must be beneficial, but pure phosphates will *not* manure as well as bones. From this, as well as from the fact that the utility of bones is not confined to soil destitute of phosphates, but is as productive on soil abounding in these constituents, it will be clear that this theory is as unsatisfactory as the first, and the question will recur with as much force as ever, "What is the fertilising property in bones?" I am well aware how easy it is to be sceptical on points of this nature, and I should not be inclined to oppose one theory without endeavouring to advance another not liable to the same objections: I have, therefore, given this subject some attention, and suggest that the fertilising principle in bones is totally independent of either phosphates or gelatine. Bones, like charcoal, *absorb large quantities of carbonic acid and ammonia from the atmosphere*, and to this I attribute their power as manure. Bones thus becoming as it were a depository or receptacle for these necessary ingredients of the food of plants, soil manured with them will possess within itself a storehouse or magazine of these gases which will continue for a long period to supply the plants with what they may need for their consumption continually abstracting more from the surrounding air. The cause of the superiority of boiled over unboiled bones is that when boiled or burnt they, being released from the protection of the gelatine or animal matter, are more porous and more absorbent of these gases. We need not then be surprised at the great utility of bone manure, nor at the vast alteration which its employment has occasioned in the farming of Cheshire during the last twenty years; for we have seen that, independent of the main principle of fertility contained in them, they will supply the lack of phosphates existing in the soil, and thus furnish those ingredients which it requires to render it both profitable and productive.

The farmer will perceive from these few remarks that boiled bones, while they are considerably less in price, are decidedly superior, as manure, to unboiled bones; which is a matter of some moment. It may be urged that the gelatine of the unboiled bones must give them some advantage, as it will supply ammonia during decomposition; but this, if it be a defect, can be remedied by cheaper means. "One hundred weight," says Mr. Bernay, "of nitrate of soda, or 150 lbs. of guano, mixed with one ton of boiled bones would amount to £4 in expense, and I am sure the quantity of nitrogen which plants would obtain from either of these additions would amply compensate for the gelatine, and be a saving of £2 10s. to the practical farmer."—*Saml. Pope, jun., Cheetham Hill.*

◆

STALL-FEEDING.

In reading several of the late numbers of the *Herald* I have been much interested in looking over the various papers that have appeared in them on that interesting and important question, the stall-feeding of milch cows. It is, in my opinion, a system that, if properly and judiciously carried out, will greatly tend to the benefit not only of the cattle keepers themselves but to the country at large, especially in the neighbourhood of large towns. I am much delighted to find that some of our most distinguished agriculturists are taking up the subject in a right spirit: the remarks of G. Wilbraham, Esq., and Mr. Wild, at the last annual meeting of the Manchester Agricultural Society, were truly interesting and well worthy of notice.

I have myself lately made a few experiments on this important question, and I find that I can keep a cow, or a stock of cows, cheaper and better for both butter and milk in the shippon than if I pastured them in the field; but the stall-feeding of ilch cows being, as it were, an artificial stem, requires good judgment, great care d judicious management, in regard to ntilation, light, warmth, cleanliness, ter, and food; and I affirm it as my inion, if these six requisites are properly d judiciously attended to in stall-feeding is far superior to any other system of cat- feeding, especially for milk cows, known present. As regards the system of at- ation and sort of food best fitted for milch ws, there has been so many conflicting inions given to the public lately, it seems perfluous in me to offer another; but ere are parts of some of them that seem me to be highly ebjectionable. The Hark Forward' letters are highly interest- g and worthy of notice: the paper by r. Dickson is a very important one, but do not admire his system of storing tur- ps directly in front of the cattle, for in e best lot of turnips we may see in the hole country it is very rare but we can nd one or two, or more, that are partly or holly rotten; there may not be any rotten nes among them when they are first stored r put up together, but it is very seldom ut either less or more of them are injured r crushed *to a certain extent by loading other causes; and when these come to for a certain length of time in a close* situation they will begin to decompose and throw off an effluvia that is very disagreeable, and is also very deleterious to animal life. Mr. Dickson's remark in regard to supplying his cattle with salt rock* is very good, for that will tend to strengthen the digestive system, and thereby improve the appetite, and increase the secretion and quality of the milk.

In regard to the food best fitted for this system I find there are many advocates for steamed fibrous matter, such as chopped hay, straw, &c., which, after being chopped, they steam or otherwise stew it with hot water, and then mix it with other articles. Now, for my own part, I think this chopped and steamed food, especially the fibrous part of it, is the most injurious kind of meat that could possibly be given to a ruminating beast. My opinion is this, that if a cow or other ruminating animal is fed upon steamed and chopped fibrous kinds of food, her digestive organs will in time become weakened and otherwise impaired by being overpowered by the stomach being from time to time overloaded with this unnatural kind of food. I am strengthened in this opinion by the several appearances I have lately seen in *post mortem* examinations I have made of cows that have died from the effects of diseased stomachs; for, in consequence of hay and other fodder being so scarce and dear this season, cow keepers have had to resort to an unusual quantity of box meat, as it is generally called in this part of the country. Several of my employers have had recourse to chopped oat and wheaten straw, which, after being cut, some of them put a quantity of it in a large tub and mix it with bran or other mill stuff, and pouring on to it a certain quantity of boiling water cover it up and let it stand about an hour or more, then mix the several ingredients well together, and add to them a few cut potatoes or turnips and a little oat-meal, and given each beast a great box full of this heavy admixture of steamed or stewed food two or three times a day, the consequence is, it has from its indigestible and heavy nature had a tendency to bring on hoove and other symptoms of a deranged state of the rumen or paunch; these symptoms having been removed time after time by the aid of various medicinal agents, chronic indigestion has been the result, followed by all the dreadful effects of indigestion and constipation, ending, in some cases, in death. In the rumen or paunch of one cow which I opened last week, and which had died from the above cause, I found about four large buckets full of the above named admixture, viz., chopped and steamed straw, grains, bran, potatoes, and oatmeal: this indigestible mass had been lying in her stomach for about a week, and had defied all the power of medicine to remove it, and the consequence was she died: therefore I say let cattle chop their hay and straw themselves with the chopping machine nature has furnished them, and then there will be little fear of it doing them any harm if it be of a good and sweet quality.

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* Salt to milk cows must be given with much caution. Let the animals have a lump of the rock to lick when they please, and they will not take more than is proper. —Ed. F. H.

The best system of stall-feeding I know is the following, I have tried it myself, and have seen it tried, indeed, I see it every day, and have always found it to answer very well: The shippon or cowhouse should be roomy and light; it should be moderately warm, but should be so ventilated at the top as to afford a free escape for the expired breath of the cattle: there should also be a sufficient quantity of fresh air, but, at the same time, there should not be any sharp current of cold air in the shippon. The cattle should be well curried and brushed, and their dung taken from behind them at least twice per day: they should be well supplied with clean sweet litter at least once a day; a strict regard to cleanliness is quite requisite and necessary for securing the good health of a stock of cattle. The next thing is their water which should be of good sweet, pure quality, and the cattle should be supplied with a sufficient quantity twice a day. If convenient to the place, it would be a desideratum if the shippon or cow house be accompanied by a roomy yard with troughs or other apparatus containing their water, to take which the cattle should be turned out, five or six at a time, twice a day; and while they are out the cleaning of the shippon might be performed.

As to the best kind of food for them the following observations will illustrate my opinion:—The first requisite for cows is good, sweet, and soft meadow hay; a sufficient quantity of this at least four times a day is of the greatest consequence to the well being of milch cows.

As to the provender or box meat for stall *fed cattle it* should be of a nature that is *of easy digestion*, and, at the same time, *highly nutritious*. I have given the following admixture when it could be procured, and have always found it to answer
in regard to economy and increasin
quantity and quality of the milk:—T
sufficient quantity of fresh grains fro
ale brewery, half the same quanti
wheaten bran, the same quantity of g
oats as bran, a small quantity of bean
and a few cut potatoes in a raw sta
mixed equally together, and a suf
box full of the mixture twice a day,
at the time of milking, will do very
When grains cannot be procured the
and oats should be increased. The
tion of a handful of common salt* int
box of provender occasionally would
improvement, and tend to keep th
machs and digestive system in order.
above cursory remarks on stall-f
milch cows are from my own practi
observations; and, as I know they
in accordance with some opinions o
ing with steamed food, I wish to sta
they apply to stall-fed ruminants
and from the observations I have h
opportunities of making in the co
my private practice, I feel assured
own mind that steamed fibrous m
highly injurious to the stomach of a
nating animal, and that it will so
later bring on dangerous symptom
the long train of diseases that usually
indigestion: but if the stall-feeding
is properly carried out in a judicio
skilful manner, I state it as my h
opinion that it is the best system of k
milch cows that is known at present.
H. Shenton, V. S., Pendleton, near
chester, April, 1845.

P. S.—I forgot to state that when
food is in season I would recomm
supply of it instead of hay.

◆

DEBENHAM FARMERS' CLU

At a recent meeting of this club the s
for discussion was the "*Comparative*
tages of stall or pasture feeding Cart H
Resolved, That the system of stall or
feeding cart horses in summer with v
or clover is decidedly preferable to t
them on the pastures. That vetch
the lands in this district, which are
ally heavy, and farmed according
four-course system, are the best and
est *green* food that can be grown f
purpose of soiling—the cheapest, b
they are grown on lands intended fo
mer tilth, when, if properly attend
when cleared of vetches, it is not ex

---

* See above.—Ed.

rished—on the contrary, the ve-
ıatter which falls from, or is left
e, improves rather than deterior-
and for the barley crop. That
ut into chaff, with a portion of
', or any kind of dry fodder, may
or food for cattle two or three
lier than when given without
cut, which, in a season like the
hen the stocks of hay are unusu-
is a matter of very great import-
e farmer. Vetches ought not to
ıed on such land beyond the end
That clover should follow as the
n food which will find a supply
ıarvest is finished. That neither
'etches should be given, unless
for twenty-four hours.—*W. G.*,

◆

NO. III.

SOILING MILCH COWS.

oes from potato land,
'ery readily to hand;
ing them men can't be hurt,
t good coals as cheap as dirt;
ubtless 'tis a saving way
what some folks throw away.
w, if to practise we must try
eam-plan of economy,
o far gone, why not go further,
ase our pasture lands to murther?
land is let so plaguy dear,
mers must shave very near;
who pays such heavy wages,
ry clodpole he engages,
practise every art and any
st, I mean,) to save the penny."

rsuits of Agriculture," a Satire. Canto II.

think, about 1734, that the London
Arts was founded by Dr. Hales,
stone, and Lord Romney, at the
of another noble man, the worthy
hipley, a drawing-master. It pre-
me the chief encourager and deposi-
icultural improvements, but unfor-
r the nation published none of its
important transactions for the first
of its existence; many of its articles
onomy were, however, given to the
Dossie's Memoirs of Agriculture and
omical Arts," of which work the first
s published in 1763, and the third
1782. As the society's rewards in
ıent of agriculture amounted in the
-two years from its foundation to the
of £3,200 besides awards of fifty-six
venty-six silver medals, it is reason-
pose its early transactions in con-
ı *rural affairs were very interesting*
hensive. I regret much, therefore, that I have not the means of ascertaining whether anything was recorded by it, having reference to our present subject, nor even of referring to Dossie's work thereon; which circumstance leads me to remark, that I have been somewhat surprised to find in one of the most respectable public libraries of Manchester containing eight or nine thousand volumes, only a solitary tract on agriculture, and a lone volume each on the kindred sciences of horticulture, and arboriculture; while the noble Chetham Library, of 20,000 volumes, appears (notwithstanding its own extensive farms and estates) to have been compiled with a singular absence of recollection that such a science as agriculture exists in the parish and palatinate, and that Manchester is as much interested in the production of British corn and cattle, as in calico and cotton; the science and learning of our libraries being, in the main, subservient to the great art of procuring the requisites for human sustenance and comfort. Thus, the chief end of practical astronomy, navigation, and the compass, is to procure us rice-puddings and sugar, tea and coffee, train oil and guano. I rejoice, however, to learn that this singular defect is likely to be supplied by the increased exertions of the Manchester Agricultural Society, of which it has of late been observed, that it has been established since 1767, and is thus the parent society of the place, among the oldest institutions of the kind in the country, and has had as much money, and as many clever men, as most others connected with it, and yet, hitherto, no series of published transactions, nor library, does honour to its career,—an honour which, I trust, however, it is reserved for its present respected chairman and his coadjutors speedily to confer upon it and the town, aided by her spirited inhabitants. Already the Liverpool Agricultural Society, of very recent origin, has its well-selected library, of which a catalogue is at my elbow, and when we see what our Heber and others can effect, single-handed, in the acquisition of universal literature, it would appear no impracticable undertaking to make an entire collection of British agricultural literature. Suppose it to commence with "The Treatyse of Husbandry, which Mayster Grosheds, sotyme Bysshop of Lyncolde, mayde and translated out of Frensshe into Englyshe, 1500," and to end with the current volume of that useful and cheap periodical the "Farmer's Herald," printed at Chester, price 2½d. it would not, I believe, far exceed the number of novels and fictions that have been purchased at treble the cost for each of the general subscription libraries of the town. Manchester has its Law Library and room of legal resort, and its Medical and Clerical also; why not its Agricultural? To resume, however. The Bath and West of

England Society was established for purposes similar to those of the London Society already named, and in the fifth of their very valuable volumes of Transactions (commenced in 1792) appeared, if I recollect rightly, some further remarks of Dr Anderson's, on soiling of milch cows. The year following, namely, 1793, the Board of Agriculture was established under the presidency of Sir John Sinclair, and the secretarian guidance of Arthur Young. The remarks of the latter upon agricultural topics had, hitherto, been a good deal of a political and of variously diversified kind, nor does the importance of soiling appear to have had his full consideration till it was called thereto by the remarks of Dr Anderson, and by some of the more observant and enterprising members of the Board, among whom stood forward most conspicuously in its behalf, Christian Curwen, Esq., to the politeness of whose grandson, now resident at Workington Hall, the present papers are likely to prove much indebted. Arthur Young had witnessed the practise of soiling in Flanders, Quercy, and elsewhere on the continent, some years before, and had given it a passing approbation in these words—"This I take to be one of the most correct, *probably* one of the most profitable methods that can be pursued, since by means of it, there is a constant accumulation of dung throughout the year, and the food is made to go much farther." His active and vigorous mind being led to a more minute examination of the subject, we find him, as the official organ of the newly-formed Board, very early making this a prominent feature of its operations, and expressing himself as a thorough convert to the doctrine laid down by Anderson, which found disciples in Yorkshire, Derbyshire, Lancashire, and elsewhere, and especially in Cumberland, under the zealous patronage of Mr. Curwen. In 1793, 4, and 5, the board collected its Preliminary County Reports of England, Wales, and Ireland, an entire set of which, belonging at the time to one of its members in this quarter, (J. J. Atherton, Esq.,) I have had an opportunity of examining, but they contain, I am sorry to say, little upon the subject, being far more occupied with corn lands, commons, plantations, poor rates, &c., than with the no less important matter of spinning grass to the greatest advantage.

These hasty compilations (intended only for the members of the Board) were, however, speedily followed, from about 1798 to 1816, by the more matured and enlarged county surveys, to some of which reference will be made in due course. The original one of the West Riding of Yorkshire, was committed to three very eminent agriculturists, Robert Brown, of Markle, projector in 1800, and many years editor of the
Farmers' Magazine; Geo. Rennie, I
eminent East Lothian farmer and lan
and John Shirreff, of Haddington, far
land agent. These gentlemen, in thei
refer to a letter from Leeds, in which nei
hood the Flemish mode of managing
doors was making, at that time, con
progress, including (as we learn fron
the mineral surveyor) the practice of
currycombing; the writer says,—"Th
few cows kept in the house all summer
way in which they are managed is, l
them grass fresh cut, and watering th
as the grass comes off, with the urine
cows. I am told that four acres of lan
this manner, maintain ten cows; in wi
are fed with grains from the brewers,
very high in price, being 3s. 6d. per
It will take about four pounds' worth
to maintain a cow for the winter mo
two pounds for grass during the su
the expense of a cow for the whole yea
six pounds." The three reporters th
to remark,—"In addition to the above
letter we may observe, that one of us,
years, has kept his cows in the house
clover and ryegrass during the summer
they are put out to a small park in the
after milking, for the convenience o
water, and tied up in the house ea
morning. One acre of clover has be
to go as far in this way as two when
More milk is produced, and the quanti
dung made in this method, is suppose
pensate for the additional trouble in cu
bringing in the grass."

The earliest printed of the revised
the Board, was the very clever and
written one of Somersetshire, by John
ley, Esq., of Shepton Mallet, publishe
in which he strongly urges the adva
housing dairy cows, and states that '
experiments have taught, that 100 acr
thus managed, will keep more cows
under the present system." In 1800
offered a premium for the encourag
soiling, awarded in 1801, and repeated
which, as forming a necessary compo
of our historical sketch, I transcribe
third volume of the "Communicatio
Board," at which time Lord Carrin
its president.

"*No. VIII. Soiling Cattle.*—To th
who shall, through the entire summer
keep the greatest number of cattle i
houses, or confined yards, and fed en
the soiling method with green food,—T
Medal.

"Certificates of the number of ca
acres of food, and sorts eaten, the

ng made, with other circumstances of the periment, to be produced on or before the st Tuesday in December, 1801."

The same year that this step was taken by e Board, its secretary published his celebrated Farmers' Calendar," in which he takes up the bject with a power and force of argument, ich it is astonishing (considering the extent which the "Farmers' Calendar" has circulad) has been attended with such comparatively tle good effect. It is, however, at present ly forty-four years since it was written, and says in the opening of the article, that "it ll probably take a century to render it as iversal as it might be most profitably." It d also the disadvantage of being "printed in book," the worst recommendation it could ve in some quarters, on which account, I rpose to advance it, with your permission, r. Editor, a quarter of a century, in this and e neighbouring counties, by transplanting into e columns of the *Herald*, when we come to e more argumentative part of our essay.

About the same time that Young's arguments peared, other distinguished characters took the pen in behalf of the practice. The ute and observant Dr. Watson, the celebrated ishop of Llandaff, (a good practical farmer,) onsidered it as one of the most important of the modern improvements introduced into riculture." The drawing up of the article on "Agriculture," in the new edition of the *cyclopædia Britannica*, published at this ped, was committed to that distinguished author obert Forsyth, Esq. He was a writer on oral philosophy, and a barrister, properties ite enough to disqualify him, in the opinion some hereditary cultivators whom I have t with, from having any opinion on agriculal subjects. The publishers of the *Encyclodia* appear, however, to have thought othere, and that a looker on might know and brace more of the game than those who were gaged in it; the consequence was that their ges became enriched with one of the best ays on rural affairs that had ever been pend, and which, perhaps, there were not half a zen practical farmers of the day who could ve drawn up. This very superior article was terwards re-published separately, in two vols. o., under the title of "Principles and Practice Agriculture Systematically Explained." To is able work I beg to refer your readers for a werful summary of argument on the subject soiling, supported by the *practical* remarks a most benevolent and active-minded clergyan of the Church of England, the Rev. H. J. ose, of Hordle, near Leamington, Warwick, hose essay we shall have to cite hereafter. at by no individual at this period, was the practice of soiling so completely established, and influentially exhibited, as by Christian Curwen, of Cumberland. In 1807 he wrote his celebrated "Hints on Live Stock;" in this work are details and calculations on the subject of house-feeding cattle, minute enough for the most practical reader, and the most cautious and dubious of rent-paying farmers. These, however, I will not cite on the present occasion, but present your readers, generally, with a passage shewing that what is in this case a matter of individual interest and profit, is equally important in a public and national point of view. "If it be correct," writes Mr. Curwen, "that there are twenty-four millions of acres in pasture, deducting four millions supposed to be required for horses, there would remain twenty millions for the support of cattle, &c. Does it admit of much doubt, that (by feeding milch cows, and fattening cattle with green food both summer and winter, in sheds) a saving of a sixteenth part, or one million two hundred thousand acres might be made? Granting, then, that one million and a half of acres might be taken from the ground hitherto appropriated to the pasturage of horses and cattle, we may naturally suppose them to be those nearest to towns, and of the best quality; most advantageously situated for manure, and consequently capable of producing above the average of estimated crops; but suppose one-fourth, or a million acres only to be under wheat annually, it would supply all our present demands. By an appropriation of a fourth to green crops, a larger quantity of food would be produced *than was supplied by the whole whilst under pasture.* The remaing three-quarters of a million acres could be left for other crops, preparatory of wheat." The importance of this calculation must strike the mind of every reader who considers it sound policy for Britain to be independent of other countries for her bread.

The soiling system was about this time warmly patronised in the south by the Earl of Egremont, who instituted a variety of interesting experiments at his farm at Kirdford, in Sussex, with a view to discover what food keeps cows in the best condition, and gives the greatest product in butter and milk, of which hereafter. The worthy John Ellman, of Shoreham, in the same county, experimented upon the subject with his usual talent, and was decidedly in favour of stall-feeding: he mentioned to the *Rev.* A. Young, that he found that nine head of cattle, fed loose in a yard, by destroying as well as eating, consumed as much hay as twelve tied up. Mr. Salmon, of Hardwick, Oxfordshire, tied up fifty cows, and found his hay go much further, "no poaching," &c. Mr. Tidmass, of the same county, tied up a considerable number; they were turned out for drinking and air night and morning, and in this way of feeding he "was certain, from experience, that the cows (especially if large beasts) did much better, and were supported with less than if abroad." In the autumn of 1807, Bailey, originally a schoolmaster, and afterwards agent to Lord Tankerville, and "the Prince of Stewards," tells us that Mr. Walton, of Stanhope, in Durham, had twelve young cattle in the fold-yard, keeping on clover, which he found "would keep them double the time consumed in that way, that it would do if they were depastured upon where it grew." In tracing the history of incidents and occurrences of the above kind, one cannot help feeling some astonishment, that where the superior advantages of house-feeding have been forced upon the attention of husbandmen by natural causes and circumstances beyond human control, those advantages have not, in consequence been systematically pursed. Thus, we are told, that "on account of the wetness of the land in Cornwall, and the *necessity for dung* to mix with the sand for manure, all their cattle are housed in the winter," and that the buildings upon every farm are, on this account, numerous; yet, notwithstanding this all-important advantage, and the peculiar advantage which Cornwall possesses in its farm buildings for cattle, manure and grass are wasted in summer, and Cornish cow-houses are left empty. In the year 1807, the farmers of Derbyshire were compelled, by a very severe winter, which covered the ground in some parts with snow from St. Andrew's to May-day, to keep their cows in doors, to the great advantage of their manure heap and their future crops, yet comparatively few profited by the lesson. Among these Farey, in his survey, tells us that Mr. John Blackwall, of Blackwall, and Francis Bradshaw, Esq., of Barton Blount, during the hot months tied up their dairy cattle in the day-time, and fed them with cut tares or vetches; and Mr. Samuel Rowland, of Mickle-over, expressed to him "his conviction of the great advantage of the practice, in economising food and increasing manure, as well as preventing *gadding*." Farey mentions a fact in connexion with Mr. John Aveson's dairy, at Glossop, which will amuse some readers: he bedded his stall cows with shudes or oat-shellings, instead of throwing them away, as was the practice elsewhere. As a contrast to this species of waste, the 30th vol. of the *Transactions of the Society of Arts*, p. 60, contains the following recipe, which Lancashire and Cheshire farmers, who buy shudes at "Shude Hill," Manchester, will, I conceive, be more likely to adopt than Mr. Aveson's, especially as it furnishes a stew which cows like as well as their masters do, an Irish stew:

Shudes, husks or chaff, 28 pounds weight;
Oil cake, 4lbs.; turnips, 112lbs.

Stew them well by means of steam, and "serve up with a little salt;" this, "with a penn'orth of straw is ample allowance per diem for any milking cow." This receipt was from the pen of John Christian Curwen, who in the report of the Workington Agricultural Society, to whose active operations we must now draw attention, thus writes:—

"The farmer who soils doubles his quantity of manure. In the old method it is made b the best of farmers only during seven months i the year. The manure dropped upon the lan may be urged as a set-off. My reply to this would be by a negative as to any natural advantage arising from the drop of cattle. I am urging here, the advantages of soiling as it relates to the making manure. A still more important argument in favour of it is, that i multiplies every acre so employed by six. The is no labour or expense that it will not repay. But deferring argument until our histori sketch is disposed of, we come to the menti that in 1810, the Workington Society, followi the example of the Board of Agriculture, off ed a premium for soiling, which was award to Mr. John Swinburne, of Chapel Bank, copy of whose letter, on the occasion, I am f tunate in being able to give:—

"To the secretary, &c.—Sir,—In claimi the premium for soiling, I beg to state that have from the 6th May to the 6th Septem last, fed sixteen milch cows and six horses the produce of four acres of clover, cut twi and 1½ acre of it cut three times; 1½ acre vetches, cut twice. The second cutting of acres of clover mown for hay.—J. SWINBURN

The number of acres occupied by Mr. S. w 260. The weight of food and crops consum above were not given by him, but the followi was Mr. Curwen's estimate thereof:—

16 cows, 128 stone daily for 134 days	..	108 72
6 horses, 18 stones ditto	..	15 12
	Stone.	123 84

Or 19,364 st.—4 acres clover,	1	cut	..	6,400
4 do. do.	2	„	..	4,480
½ do. do.	3	„	..	1,200
4 do. do.	2	„	..	4,480
½ do. vetches,	1	„	..	2,400
½ do. ditto	2	„	..	1,200
				20,160

Mr. Atkinson, another competitor, soiled f 14 weeks—sixteen cows, three bulls, twel horses, besides feeding forty-two pigs on g estimated thus:—

					Stone.
19 cattle, 98 days, at	152	stone	....		16,906
12 horses ditto	36	„	....		3,528
42 pigs ditto	42	„	....		4,116
					[illegible]

Amongst other successful soilers were, Mr.
hn Wallace, of Milltown, and Mr. Alexander
adford, of Nether-place. In the same year,
L. Dunlop, Esq., of the Isle of Man, gained
e silver cup, given by the president of the
anx Society, for soiling. This gentleman,
n a farm of 62 acres, proved himself one of
e most spirited improvers of the day; it was,
wever, fortunate for him (as was the case
h Dr. Anderson) that in dairy matters his
y was not a whit behind him in effort and in
ellence. Mr. D. soiled seventeen milch
s, and fifteen horses, which consumed an
in four days and a half. Thus:—

	Days.	*Stone.*
17 cows, 8 stone each, by	4½ ..	612
15 horses, 4 ditto	ditto ..	276
or 5½ tons.		888

e following year the Manx Report says of
gentleman, "Mr. Dunlop soils on a scale
more extensive than has ever been prac-
in this island; during his short occupation
ee years, he has totally changed the ap-
ce of his farm; his cattle, of all descrip-
, are in very high condition; his butter
readily at a considerable advance above
other produced in the island; and he makes
e pronounced equal to Stilton."—In the
kington Report for 1813-14, its indefati-
president thus writes, "All that has been
all that can be said, in favour of soiling, is
more than it deserves. The saving in food
arly two-thirds, whilst the manure produced
is in the proportion of 12 to 7. The health
condition of the cattle are also much ad-
ed. A dairy constantly soiled will yield
iderably more milk than the same number
ows grazed. Where winter green crops
ot be raised, a less stock may, by soiling,
made to convert the straw into manure.
h as I have heretofore recommended the
tice, I have not done it more than justice.
n the numbers who have adopted this me-
, the most incontestible demonstration of
dvantages is afforded. I have never heard
ny instance in which it has been fairly tried
re it has not been found to answer."—*Hark*
ward!

◆

OOSEBERRY CATERPILLAR.—To prevent
attack of this pestiferous insect, when
plants are beginning to open their leaf-
s, dust the whole of them over with dry
t.

he Rev. Somers Payne is fattening a
t to compete *with Prince Albert's*
ox the next autumn show of the Royal
icultural Improvement Society.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a meeting of the council, on the 16th ult., thirty-six new members were elected, and forty-one candidates named.

PRIZE ESSAYS.—Mr. PUSEY reported from the Journal Committee the following awards of Prizes for Essays:—

1. The Prize of £20 for the best Essay in the miscellaneous class of "any Agricultural subject," to Mr. Henry White, Land Agent and Surveyor, Warrington, Lancashire, for his detailed account of the making of Cheshire Cheese.

II. The Prize of £20 for the best account of reclaiming Heath-land, to Mr. John Watson, jun., Land-agent, Kendal, Westmoreland.

III. The Prize of £20 for an account of the cheapest and best method of establishing a Tile yard, to Mr. Frederick William Etheredge, of 15, Park-street, Westminster.

BONE MANURE.—Mr PUSEY then informed the council, that the prize essay of Mr. Hannam, on the application of bones as a manure for the Turnip-crop, contained, in his opinion, not only a detailed account of the best experiment ever made in agriculture, but some points of so much importance at the present season, when the time for sowing turnips was coming on, that he felt anxious that not a moment should be lost in communicating the facts to the members, for their information and guidance. Mr. Pusey having adverted to the great discovery of the economical and efficient employment of bones as a manure when dissolved by maceration in sulphuric acid, proceeded to read extracts from Mr. Hannam's Prize Essay, of which the following is the substance:—

I. Superiority in economy and effects.—This result consisted not only in a greater amount of crop obtained at less cost than in the case of bones employed in their ordinary state, but also in the condition and character of the plant itself, as well as in its growth; the crops derived from dissolved bones being both more abundant, healthy, and less liable to attacks of insects, and the plant more rapid in its growth (by ten days in the first month, and the gain of a month at the end, the turnips from the dissolved bones being ready for use several weeks before any other), while it exhibited a decided tendency to form bulbs at a much earlier period. The greater and more readily fertilising effects of bones dissolved in acid than any sort of bones not so prepared, were clearly shewn in the following results; in which the crops from the dissolved bones took the lead from the commencement:—

Bush. of bones per acre.		*Cost of bones per acre.* £. s. d.		*State of bones.*		*Amount of produce per acre.* tons.	cwt.	st.	lb.
16	..	2 0 0	..	Crushed	..	10	3	4	8
2	..	....	..	Dissolved	..	9	12	0	0
2	..	....	..	Dissolved	..	11	15	0	0
4	..	....	..	Dissolved	..	12	11	6	4
4	..	0 19 6	..	Dissolved	..	14	6	4	0
4	..	1 0 6	..	Dissolved	..	14	11	7	0
8	..	1 9 9	..	Dissolved	..	13	15	7	0
8	..	1 13 0	..	Dissolved	..	15	2	5	0
8	..		..	Dissolved	..	16	1	3	6

From which it appeared, that 2 bushels of dissolved bones per acre would actually produce as good results as 16 bushels of bones in their ordinary state in some cases; that 8 bushels of dissolved bones would greatly surpass 16 bush. of bones used in any other manner; and that 4 bushels per acre would be a fair quantity to apply in the state of solution; the results being greatly superior to those from four-fold the same quantity of bones applied in the usual manner, and the cost of the application less in proportion to the amount of effect produced, evidenced by the weight of the crop, than that of any other quantity.

II. Proportions.—1. *Bones and Acid.*—The proportion of acid had generally been one-half of the weight of bone employed; but one-third, or even one-fourth of the weight of bone might be used with success, if occasion required. That was an important point in the economy of the manure, as it affected the cost materially. 2. *Water.*—The proportion of water had generally been 100 times the weight of acid; but 50 or 25 times the weight of acid would serve the purpose required very efficiently. That fact was one likely to be of great use, one of the main practical difficulties to contend with in the application of dissolved bones being the large quantity of water which had been considered necessary. Mr. Hannam's results showed

that 4 bushels of bones (12st), 6 st. o
300 st. of water (50 times that of a
420 gallons of dissolved bones to be a
acre; while 150 st. of water (25 tim
acid) would suffice. It was, howeve
of notice, in reference to the preparat
mixture, that the bones should be pu
much as possible before they are
the acid, in order to render the solu
complete; but should that not be th
a few of the larger portions of bone b
dissolved, that circumstance would c
injurious effect, as there would be bo
dissolved for the plant in its early s
the larger particles would disintegr
grees and come into operation towa
of the season.

III. Dissolved-Bone Compost.—M
thought that however great a point
by reducing the bulk of the water en
diluting the solution of the bones, a s
step was attained by substituting alt
compost for the liquid form of the a
In the Society's last Journal, p. 596,
nant, of Shields, near Ayr, gave the
account of his practice on this head
25 bushels into three old boilers (of w
farm here has a supply,) and next p
bottles of acid, of about 170 lbs. ea
Scotch pints (18 imperial gallons)
water into each boiler. It boils away
rate for some time, and in a day
empty the boilers into two carts of li
and turn the mixture over. At this
bones are only partially dissolved, bu
and decompose in the heap, after bei
over three or four times; and in the
seven or eight weeks the compost be
and breaks down with a shovel in a
spreading with the hand in the dr
Thompson stated that he had himself
found 4 bushels of dissolved bones
the form of compost fully equal to 2
farm-yard manure, there being no p
difference in the crop throughout the

IV. Cost *of Acid.*—The EARL O
called the attention of the council to
of the acid employed for the solu

Ie understood that sulphuric and mu-
l might be obtained for three farthings
It was desirable, not only that the price
d should be ascertained, but that its
d strength should also be uniform.

YETT has communicated the following
g particulars in a letter to Mr. Pusey:
rs. Leonard and Jordan, of the Alkali
Bristol, offer to supply me with acids
ving bones as follows:—

'itriol (sulph. acid)	sp. gr.	1850	per lb.	1d.
Acid	(ditto)	ditto	1700	„	⅝d.
ic Acid	.. ..	ditto	1100	„	⅜d.

prices are charged for 10 carboys or
for any less quantities ¼d is usually
A carboy is a large glass bottle, con-
om 1 to 1½ cwt. This is a reduction
and 100 per cent respectively, on some
inted prices; but those who buy largely
e able to test the strength, without
which, the price, of course, is of no
ie. This is done very easily with a
ial called a thousand-grain bottle,
sts about 6d. Balance one of these
les, fill it with the acid up to the mark
eck; the weight gained is the specific
nd measure of strength. Thus, the oil
of commerce in the thousand-grain
ould weigh 1850 grains; and the brown
ed above, 1700 grains. The manufac-
form me that there is no difference
hese two, excepting that the latter is
entrated than the former. This, I
ust mean less purified as well. It
contains some very small quantity of
natter, which has found its way into
ur during its voyage or manufacture;
h being charred, gives the colour, and
t less saleable for many purposes in
ure. For our purposes, this is no
. The reduction in strength as com-
h the oil of vitriol is more than covered
duction in price. I calculate, that the
of the brown acid, which would cost
6s. 3d., would, taking its relative
into account, dissolve as many bones
tity of the oil of vitriol, which would
7s. This, of course, presumes that
no *impurities in either injurious to* their effect on bones, and is mere calculation, which should be tested by actual trial. In all sulphuric acid, I believe there is a little lead, derived from the leaden vessels in which it is manufactured; and sometimes, when made from Pyrites, a little arsenic, but not enough, I suppose, to have any decided effect on the specific gravity or strength, nor on the vegetable or animal that feeds upon the crop.

Mr. THOMPSON suggested, that as it was often difficult for a small farmer to find a vessel of sufficient capacity to contain the mixture of the dissolved bones and water, it might be found a simple substitute to form a sort of pond, puddled with three or four loads of clay, in which the mixture could be made. When the solution was complete the clay might be mixed with the compost.

Expenses of Draining.—The CHAIRMAN called upon Mr Parkes to read a paper on the cost of draining land.

Mr. PARKES stated that the following digest had been drawn up by him at Mr. Pusey's request, in order to exhibit the real costs of drainage to a landowner who might be disposed to erect his own tilery. The price at which he had estimated the inch-bore pipes fully covered every expense incurred in their manufacture, including interest at 5 per cent, on the annual expenditure for wages, and a charge of 20 per cent. per annum for the tilery and machine, *i. e.* on the extreme supposition that, at the end of five years, all the pipes required for the estate would be made and that none would be sold to profit. He called this an extreme supposition, as there were few considerable estates on which many other articles besides draining-tiles were not in constant demand, such as roofing tiles, bricks, &c., and, in most cases a profitable sale would be found for the productions of a tilery. He was now erecting several tileries on a scale suited to the magnitude of the respective drainages.

INSTANCES OF THE COST OF DRAINING AN ACRE OF LAND, *the drains being laid with inch-pipes at vurious depths and distances asunder; the pipes being manufactured on an estate, and assumed to cost 6s. per thousand.*

Instances.	Depth of Drains.	Dist. betw. Drains.	Length of drains. per acre.		Cost of digging drains	Pipes per acre.	Cost of pipes per acre.	Total cost of dains per acre.			Character and Soil.
No	Feet.	Feet.	Rods	Furlgs.	p acre	Feet		£.	s.	d.	
1	3 0	33	80	2	20s 0	1320	7s 11d.	1	7	11	Uniform Clay.
2	3 0	33	80	2	20 0	1320	7 11	1	7	11	Ditto.
3	3 0	33	80	2	20 0	1320	7 11	1	7	11	Ditto.
4	3 6 to 4 0	40	66	1.65	22 0	1089	6 6	1	8	6	Ditto.
5	4 0	50	53	1.325	26 6	875	5 3	1	11	9	Clay, with some stones.
6	3 0 to 3 6	49½	53.3	1.333	35 6	880	5 4	2	0	10	Clay super; hard gravelly subsoil.
7	4 0	49½	53.3	1.333	35 6	880	5 4	2	0	10	Clay super; hard gravel bottom.
8	4 0	66	40	1	26 8	660	4 0	1	10	8	Various; clay, gravel, sandy loam
9	3 6 to 4 0	33	80	2	50 0	1320	7 11	2	17	11	Clay super; hard black gravel, springy subsoil.
10	2 6 to 3 0	30	88	2.2	Stone drains 14¾d per rod, for digging, getting, drawing, filling.			5	8	2	Clay and stiff loam super; with stones in subsoil.
11	3 0	20	132	3.3				8	2	3	Clay, with some boulders in subsoil.

Observations.—"The particulars of all these drainages were collected by myself. With the exception of Nos. 3, 10, and 11, they are stated in my 'Report on Draintiles and Drainage,' (Journal, vol. iv.); the only change now made being in the cost of pipes, which is adapted to the case of a landowner manufacturing his own pipes, and charging himself with their prime cost. The wages given for digging are common to the respective districts mentioned, laying pipes, filling in, and spreading any surplus soil included. The first three examples show the rates for cutting three ft. deep *to be alike,* as regards uniform clays in Kent, *Sussex, and Surrey.* The price given for cutting must necessarily vary with the texture of the subsoil, and the depth of the drain the total cost will be materially affecte distance at which they are placed Nos. 4, 5, 6, 7, 8, 9, would have co twice the money had the drains been l clay 30 inches deep, whereas, by goin the clay into the gravel (which we water) the freer percolation in the la admitted of a greatly extended distanc the drains; thus, even in such an in Mr. Taylor's, No. 9, the most difficu cited cases, and requiring greater near drains from the abundance of springs, cellent drainage would have been effec than £3 per acre, if the pipes had l duced at 6s. per thousand feet, as may be done.

Mr. Thompson, No. 3, has dra acres of his own two farms, and 225 Mr. Clarke, of Denmark Hill, owning estates in Surrey at Sidley Bridge nersley. He first drained with bu finding bush drains very liable to sto erected a tilery for Mr. Clarke in 1 completed the drainage with 1¼-inc He states that he never saw any of th drains more than half bore full at the nor have any of them betrayed signs of ment. He prefers, and has adopted, the depth when the outfall permits, a from observing that main drains of th bled the land more effectually, and to distance, than the parallel drains 3 flowing into them. He is in the habit ing the pipes with thin hedge loppings refuse, which he considers to advance t of the drains, and to prevent silt tering at first. The water issuing fr as from all other deep drains I have is invariably as clear as crystal. Mr. son has not paid more than 3d. per ro of his drains (excepting a few patch large flat sand-stones had to be got this price includes the covering wi clearings pressed firmly down upon t The getting and carrying this refu drains may be rated at about 1s. 6d. The drainers earn from 12s. to 15s rding to the time of the year and their l.

los. 10 and 11 are instances of the cost tone drainage in Somersetshire. Deep drains there recognised as much more effective a shallow system, and I observed some ntly made 3-feet drains, at 60 feet asunder, ing the land in good condition. It was with a porous subsoil. Stone-draining s to have been practised on the estate of Honourable and Reverend G. Neville Gren- Butleigh, for at least 100 years; but old examples (which were probably not with due precautions), are now all stop- p and useless. Almost all of them are in the direction of the greatest fall, and lel with each other. The cost of stone s, and their liability to choke, have formed at bar to improvement in this district. the examination I have made of the soils tleigh (the drainage of which is now com- d to my management), I consider that its lete and permanent drainage with pipes on the estate will be effected at a rate ng from 30s. to 40s. per acre total cost. pipes delivered in the fields will not cost uch per acre as the mere leading of the ."

r. **Parkes** then communicated some inter- facts respecting the increased produce of ed soils compared with the same before age.

r. **Hobbs** wished to warn the members of Society against the use of inch-pipes, as s laid down with them had been found in x to *blow* or stop up; and he believed it impossible for so small a pipe as an inch- to carry off the water quickly enough. ad observed, after heavy rains, more water ng from drains than would fill a 2-inch . He referred to Mr. Dixon, and a state- t made by him in the last Journal.

Ir. **Pusey** observed that the length of the s mentioned by Mr. Dixon, was much too t for the size of the pipes; and this ac- ited for the accumulation of the water in soil.

r. Parkes agreed with Mr. Pusey on that point. An inch-pipe drain was sufficient, if not exceeding 300 yards in length. If the field was of greater length, larger pipes should be added in succession, as was practised in Kent. He had never heard of, nor seen, an inch-bore pipe running full at the outfall 300 yards in length, when a drain was 3 feet deep; and when the distance between the drains was as little as 24 feet. He had never heard of inch-pipes *blowing* (a phrase which he did not understand), nor stopping, where the drain was properly formed to receive the pipes; it was a mere prejudice on the part of those who did not practice the proper system of cutting, laying, and filling in. The hundreds of instances of success in all varieties of soil, was a sufficient answer to the allegation. Mr. Hobbs had observed that the surface water was not removed sufficiently quick by inch-pipes. He (Mr. Parkes) would say that by shallow drainage, the water of rain might be, and was, often carried away too quickly; it was removed before its fertilising qualities had time to give out their full virtue. By deeper drainage the water was removed below the surface as quickly as by shallow drainage, that the land was equally soon ready for working, &c.; but by compelling the water to descend through a greater mass of earth before it passed finally off, the deeper subsoil was elevated in temperature, its texture was ameliorated, and the water quitted the earth perfectly colourless; whereas from shallow drains it issued cloudy and charged with useful matter. He then instanced cases of his own knowledge, which shewed that inch-pipe drains were uninjured by annual floods; they were neither blown up nor stopped up, although the flood covered the surface of the fields, and necessarily filled every drain with water. He also adduced examples of excess of drainage in certain soils, and the advantage in such soils of being able to command the presence of water at a proper depth below the surface, in a season similar to that of last summer. The use of 2-inch instead of inch-bore pipes was not only unnecessary as a general rule, but would add considerably to the cost of drainage.

Mr. **Pusey** objected to the use of 2-inch, or any larger pipes, where the inch-bore sufficed, not only on account of their increased price, but from the increased weight and cost of carriage. He had tried the inch-pipes, and had entered into a contract for 200,000 of them, at 10s. per thousand. This would only amount to £100. The same length of draining tiles would have cost him last winter £550, and six winters back £850. He stated as an interesting fact that drains he had laid previous to last year, in a very retentive clay, had either not run, or very insufficiently, till last autumn, when all acted well, in consequence, no doubt, of the deep and extensive cracking of the soil from the drought. He had begun draining at 10 feet interval and 30 inches of depth; but now drained the same land at 30 feet interval, and a depth of 34 inches. Drains so made last winter, had acted at once in consequence of the previous dry summer.

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THE COLLEGE OF CHEMISTRY.

We have reason to believe that the establishment in London of a College of Chemistry is now pretty certain.

That such an institution will be attended with important national advantages no thinking man will be found to deny. If its establishment had no other object than that of adding to the scientific character of our natural philosophers, and by that means to raise us in the scale of civilized nations, we should be very apt to cry "content,"—but when we feel assured that beyond adding to the general scientific rank of Great Britain, important trading, agricultural, and manufacturing benefits will result to the people, we should be sadly wanting in our duty were we to pass by with silent good wishes the exertions making to establish, upon a permanent basis, a monument dedicated to Chemical Science, which shall be in every way worthy of a great nation.

Several pamphlets have been put forth by the council formed for carrying out the views of the promoters of this great national work, from one of which, addressed to agriculturists we make the follow
tract:—

In claiming for an institution, desi
advance the science of chemistry, the a
British landowner and farmer, it appea
Council of the "College of Che
expedient to furnish answers to the
questions:—

1st, What benefit can agriculture be
to derive from chemistry? and

2nd, Upon what ground is the agri
called upon to assist in promoting the
tion of that science?

In the first place, chemistry is able
us, with precision, the nature and a
the substances taken off the land in ev
and the sources whence these may be
in an economical form to be restored t

If we assume that the agriculturist h
himself of the best methods and imple
perfecting the mechanical condition of
has had recourse to draining, &c., the
which he must know is, in what ma
matter carried off the land, and dispos
be replaced—in other words, how to pr
exhaustion of the soil.

For this purpose it is that the e
position of every article of agricultura
should be clearly ascertained. The
which enter into and compose the su
all vegetable and animal bodies are k
a general way, to consist of two kin
derived from air and water, and tho
from the soil. With respect to the
nature has furnished mankind with
haustible supply; the latter occur, in
in variable, but limited quantities,
therefore, sooner or later, be exhausted
order to maintain the fertility of the la
be continually replaced.

The distinction between these two
materials constituting crops will be be
stood by referring to one or two inst
which certain plants are cultivated for
pose of obtaining only such parts of
are supplied by the atmosphere, the
of the soil being only necessary to the
of the plant, and the creation, so to
the marketable article.

Thus starch, woody-fibre, and sugar,
stances for the production of which ma
are exclusively cultivated. These su
are formed by plants from the air an
and contain no element derived from
In many places, the potato is grown
its starch, the beet-root for its sugar,
hemp always for their woody fibre.
the separation of these commercial arti
total amount of the refuse, the washi
pulp of the potato, the leaves, pulp, &

or hemp, be returned to the soil as manure, crops, which in respect to the whole plant highly exhausting, may be continually d upon the same land without impairing its lity.

we now consider that in growing other —wheat, for instance, the farmer cannot tly return to the soil all that his crop has from it, because the saleable part contains, only the matter supplied by the air and , but materials belonging to the soil itself, all see the importance of knowing precisely part of the soil he sells in his grain, be- this is precisely the part which ministers e production of the grain itself, in the h of the plant, and that it consists of mat- hich generally exist in the soil only in e quantities.

amount of the earthy constituents of varies very much. According to Bous- lt—

00 parts of	wheat ..	contain	2½	parts
,,	wheat straw	,,	7	,,
,,	rye	,,	2	,,
,,	rye straw	,,	3½	,,
,,	oats	,,	4	,,
,,	oat straw	,,	5	,,
,,	potatoes	,,	4	,,
,,	beetroot	,,	6	,,
,,	Swedish turnips	,,	7½	,,
,,	peas	,,	3	,,
,,	pea straw	,,	11	,,
,,	clover	,,	7½	,,

onfine ourselves to wheat, it appears from cent researches of Dr. H. Will that 100 of the earthy constituents of the grain of—

otass	22 to 34	parts
oda	16	,,
ime	2 to 3	,,
agnesia	9 to 13	,,
eroxide of iron	1	,,
hosphoric acid............	49	,,

trace of sulphuric acid, silica, and fluorine,

the earthy constituents of wheat straw n very little phosphoric acid, but a large t of silica. Now it is obvious that if the continually restores all the *straw* to his but neglects, from want of knowledge, or , to replace the earthy matter of the *grain*, nd will be exhausted, and he cannot con- to grow wheat upon it. Moreover, if he an effort to maintain the fertility of the for wheat, he must restore to it every lient of which it becomes exhausted by op in a *proper proportion*. To know this rtion essential to the growth of every par- r crop, he must have recourse to informa- upplied by chemistry. One of the earthy ituents of wheat enters so largely into other crops, that the amount taken off nd *everywhere is very great, and consti- a considerable proportion of the total* amount contained in ordinary land, so that the loss has already, even in the present state of science, excited attention, and aroused the efforts of the farmer to repair it. We allude to phosphoric acid. Now the chemist has shewn, that in the bones of animals a great part of this material which has been drawn from the land in the growth of vegetables is to be found, stored up in a form suitable for its restoration. The use of bones as a manure is a *chemical* discovery; and its importance must be great, if, as a late writer states, "one cart-load of bone-dust will raise more turnips than twenty of farmyard dung."

The action of lime, and the effects of burning the soil, have been explained by chemistry, and thus the misapplication of these important ameliorations may be prevented.

The true principles upon which the benefit of fallow and the rotation crops depend, have also been, in a great measure, elucidated by chemistry.

Again: the employment of guano, of nitrate of soda, of gypsum, of salt, sulphuric acid, salts of ammonia, silicate of potass, and a great variety of other manures, requires the guidance of the chemist. These substances supply materials which, directly or indirectly, minister to the growth of plants, by serving as their food; they are expensive in themselves, and if cast upon the land at hazard, are just as likely to produce loss as gain to the farmer. If he carries to his land a substance of which it has already enough, whilst it is deficient in another which he fails to supply, he wastes his money and his time. What he wants to know previously to their use is, what crops require the particular material he proposes to give them, and which of his fields is deficient in that material. The needed information he may expect to derive from the chemist, who should be able to furnish the agriculturist with very accurate knowledge of the nature of his land.

The soil, as is well known, owes its origin to the disintegration and decomposition of rocks and minerals, and of the vegetables which have previously grown upon it. Its constitution, therefore, differs in various localities, according to the nature of the geological formations whence it has originated. To a certain extent, and for certain purposes, the geologist can explain the nature and properties of the soil in any given place, but geology itself greatly needs the assistance of the chemist, to shew the constitution of rocks, soils, and minerals, in order to perfect that science. A knowledge of the chemical constitution of the soil must be the basis of any successful attempt to increase the fertility of land by adding to it ingredients which it may be supposed to need. The aim of the enlightened landowner not being merely to maintain the fertility of his estates, but to augment it by raising the production of the poorer lands to the standard of the best, the greatest known crops should be the goal to which every attempt of the kind should at least tend. Admitting the land called *poor* to have received every amelioration possible from mechanical contrivances, draining, &c., it would now require to be supplied with a store of the ingredients constituting the earthy materials of plants, in due proportions, and in such a state as to admit of their becoming gradually available as food to successive crops, no necessary substance being omitted, on the one hand, and, on the other, their solubility in water not being so ready as to admit their being washed away by the first rains. In order to fulfil these important indications, the aid of chemistry is indispensable.

1st, It is obvious that if the agriculturist could be put in possession of a series of analyses of soils, made with perfect accuracy, agreeing with the geological map of the country, and in a tabular form, it would furnish him with the most valuable data, and assist him in all his operations.

2ndly, To the chemist the farmer must look for assistance in obtaining the materials necessary to maintain and augment the produce of his land. He has already, as we have seen, supplied him economically with many of the required materials; there are others, no less essential, still wanted—potash, for instance. So long as we continue to derive the potass employed in the arts from America, as the produce obtained by burning the forests and washing the ashes, the commercial article will be too expensive for the farmer, although an indispensable material in the growth of plants. Fortunately, the waters of the ocean by which we are sursounded contain an inexhaustible store, not only of potash, but most of the other inorganized materials which enter into the composition of plants, and a supply of which is absolutely necessary to the fertility of the soil. Recently, M. Balard, a French chemist, (whose high scientific character precludes all doubt of his accuracy,) has announced that he has discovered a method of deriving an unlimited supply of potash from the ocean. He finds sulphuric acid and soda may be obtained, together with potash, from sea water, in such abundance, and so economically, as to furnish all France, and, indeed, the world, with sulphur, potash, and soda, independently of Sicily and America. In the memoir, which M. Balard presented to the *French* Academy, he says, that although he *has at present* been able to obtain only a small *per centage* of the above matters from the *water which* it is known to contain, yet that, nevertheless, his process is successful as to cost, and he calls upon his scientific brethren to assist, with their experiments and suggestions, so important an undertaking. Should this plan ultimately succeed, it would probably produce another advance of our manufactures, similar to that effected by the discovery of the method of obtaining soda from common salt; and i would certainly revolutionize the practice manuring, by supplying all the constituents plants, and, therefore, all that is necessary fertilizing the soil, at a price suitable for universal use.

In many localities, an abundance of materi lie stored up beneath the soil, which the surf stands in need of. To shew in what sub- and deep strata these substances exist, in a state as to be easily and cheaply separated, chemical examination alone is necessary.

Thus far we have confined our remarks to principles of *mineral* manuring. It is at sent a matter in dispute, whether animal vegetable substances should be placed on land while undergoing decay, or after their cay is complete; whether the ammonia other products of decomposition which, du decay, escape into the air, be useful or not the crops, if placed upon the land? The sion of this question is of the greatest imp tance to the farmer, as it would teach him best and most economical method of employ the manure of his yards, and probably shew whence he may draw a supply independent foreign importation.

An element, which chemists call *nitrog*, found to be a constant and necessary part wheat and other grain, and, indeed, of alm every crop. The enquiry for men of science whence do plants derive it? If this were certained, it would be of great advantage to farmer, as they could at once tell him things which he would like to know, respect manures, and which would be of far more because universally true, than the experience any man, since the most extensive experi is, after all, only partial and limited.

Again: With respect to the breeding and tening of cattle, there are many questions remaining open, and requiring a diligent ch ical investigation. Science alone can reco conflicting opinions and draw certain and conclusions from experience.

We regret that want of space should vent our going further into this very esting question at present, however, intend in our next number to continue above extract. An important paper the subject appeared in the Tim

the 7th ult., to which we would
attention of our readers.

Reviews, &c.

bandry of the District: communi-
by Henry Badcock, Esq., *land-*
to the members of the East Cornwall
mental Club. London: Simpkin,
all and Co.; Launceston: T. W.
x.

phlet is written for the purpose of
out certain defects in the system
ndry pursued in a particular dis-
t as the same defects are no doubt
d in most districts, we shall pub-
ly, in the form of extract, our
warnings, on the subject of those
Thus the first defect pointed out,
" *Doing things out of proper sea-*
respect to which the writer ob-

preparation and ploughing for wheat,
loughings for and tilling of spring
otatoes, require our first considera-
next, that of depasturing seeds and
t improper periods; and, lastly, that
ng stall dung on the surface too late
ng."

first of these, Mr. Badcock says,
rve that on land intended to be bro-
eat, cold earth or clay is frequently
, or taken from the soil of the field,
with lime or sea sand, almost imme-
ore tilling, (sometimes perhaps at a
late even for this,) and applied to the
uite a raw and unfit state. This is
without any previous preparation of
urther than a partial skirting a few
e, (except where the land is of suffi-
or paring and burning,) so that fre-
e manure does no good whatever to
op, and often injury arises from the
c. Wheat, however, on the whole
o often suffer from late sowing as
; the failure of this crop may gene-
tributed to the mismanagement of the
, more particularly late ploughing.
requently ploughed down in May,
ly, and this is called a fallow for
ead of being done six months before.
of the year it is ploughed for wheat
more fit for mortar than to receive
ther evil and loss arises out of this, namely: when the corn fails, weeds supply its place, and the land is thereby rendered unfit for the next crop. Late preparation and ploughing for wheat prevents the arishes from being ploughed in proper season, and hence arises the melancholy sight of naked fields, which last year were seen in almost every direction, sown with spring corn. Most of the arishes are not skirted down until long after Christmas, and ploughed again after Lady-day; in all the heavy and clayey soils, this late ploughing is attended with much loss in the next crop, whether it be potatoes, turnips, or spring corn. In the first place weeds take full possession of the land from harvest until the first ploughing, frequently after Christmas, and impoverish the soil more than the preceding crops; and, secondly, and too frequently, cause a failure in the following crop, even after it has cost ten times the amount in the labour of tilling that it would have cost had it been ploughed in proper season. In clayey and heavy soils it is very difficult and expensive, if not impossible, to get the land into a good and proper state to receive seed after late ploughing. I went over many fields last year, said to have been rolled fourteen or fifteen times, that were still in a very unfit state for vegetating seed. Most experienced farmers are aware of the value of early ploughing after harvest; but if you enquire the reason why the arishes are not ploughed down in the autumn, you are generally told that the keep in them is required, and cannot be dispensed with. Now in many districts one third at least of the crops are lost by this system. I mean that only two bushels of spring corn are grown in the same land that would produce three, under a system which I will by-and-by point out. The pasture in the arishes is certainly not worth more than two or three shillings per acre, on an average; and if the land was in a clean state it would be of a still less value. The loss of the seed crop too, owing to the unfitness of the soil for vegetation, is almost a certain consequence.

Turnips, in many places, are allowed to remain on the land a fortnight or three weeks after the corn seed should have been sown, to the detriment of that crop, as well as to the injury of the soil. Inferior samples must follow, if not a loss of the corn crop altogether.

Late tillages of spring corn necessarily produce late tillages of potatoes and turnips, and hence the frequent failure of these crops also. Potatoes should be tilled before they first sprout, for it is well known that many of the early potatoes will not sprout more than twice, and some only once; such as the ash-top kidney. It cannot therefore be supposed that the seed of the other kinds of this root receive no injury from the young sprouts being frequently taken off during two or three months in the spring, which is the case in late sowing.

Late tillages produce late harvests, and as a matter of course greatly increase the expense of harvesting; and often, arising from bad weather, a loss in quantity and quality is caused.

Many other evils inevitably result from too late ploughing and tilling; but we will pass on to a consideration of those which may be prevented by seasonable attention.

The hoeing of turnips and potatoes is generally left much longer than is necessary before the first operation is performed; very frequently this is delayed until the weed has quite overrun the plants, or the plants have destroyed each other: the consequence is, that the work then costs twice, thrice, or even four times as much as it would have cost had it been done in proper season. The crop seldom sufficiently recovers to be of much value, and the land is always left in a foul and bad state. It is a fact worthy of notice here, however strange it may appear, that the better the crop of potatoes or turnips, the better will be the succeeding crops of corn and seeds; this is the case also if the land has been kept clean. There is something in this that I have never been able to account for, but so it is.

As a general rule, turnips and potatoes should be hoed at least three times; the first, which is the most important, should be performed as soon as the turnip plants can be properly distinguished, and for potatoes as soon as they are up. The next hoeing should be in about three weeks after, (according to the state of the weed) and the last, at a somewhat longer period.

It may be proper here to observe, that although the samples of spring corn sown too late are sure to be inferior, that the quality of samples mainly depends on the elevation. The nearer the level of the sea the land is, the better will be the sample, and the greater the quantity of grain in proportion to the bulk of straw; indeed, if sown in proper season, the goodness of the sample may be almost measured with certainty, (according to the state of the season,) by the elevation. Barley cannot be grown to perfection many hundred feet above the level of the sea, except in very peculiar seasons. Wheat can be grown much higher, and oats very much above wheat, and it may be set down as a certain rule that the nearer the level of the sea, the earlier and the greater will be the perfection of all grain, of fruit, and almost of every other vegetable. Still, if the seed be not planted in *proper* season, the samples will be bad in the *very best situations.*

So much for the bane of good husbandry, *now for* the antidote :—

In a general way then my plan is
way soil and earth, intended for manu
be carted together nine or twelve m
vious to being used, especially wher
clayey nature; and that it should
over two or three times during th
months; that the lime, sand or dung
to be mixed therewith, should be a
thoroughly mixed together, for at
months before spreading. That if p
burning be the preparation, it should
not be burnt until June or July, for t
the ashes are turned under the better
the fertilizing quality is exhausted if
lier in the spring, or if allowed to
burrows, or spread on the surface.
it is burnt after paring, the more val
be the ashes.

Except in very particular cases "
rot" after burning is not desirable; b
plough for wheat, if after the beginni
The earlier in the season, the deeper
be performed; but in all cases of dee
ing, the manure should be spread aft
the surface. When the preparation i
the land should be first ploughed dee
preceding Michaelmas, or as soon aft
cumstances will permit; and should,
soils are at all retentive or clayey
worked when perfectly dry in the
summer. I will here mention two fa
most forcibly shew the great importa
posing the soil to the influence of t
phere, by what is generally termed
the action is of a similar nature, and
the same results, one by a very slo
other by a quick operation. You ha
the effect of heating the soil to a cert
by burning peat, and most of you hav
without doubt the great strength an
that clay possesses by being kept dry
in a wall. Some chemists say, there
composition effected in the clay, and
is formed in old "cob" walls; some,
monia is absorbed; but be this as i
seems quite clear in practice, that
and dryer the weather, the greater the
fallowing, during which the soil shoul
in the roughest and most exposed stat

In all heavy and clayey soils I am i
believe, that with judicious managem
arish fallowed is the very best prepara
wheat tillage that can possibly be mad
also the easiest and cheapest. My pl
is to plough down the arish as soon a
after the oats are carried, and as deep
well be turned, shewing thin skirting
on the furrows; in this state it shoul
until quite dry in the following summ
it should be thoroughly worked a

ring which the clay will have altogether dis-
eared. By ploughing a little deeper in this
y for every fallow, the soil may be increased
any extent, even without thorough draining,
the enormous expense of carting from a dis-
ce soil of perhaps no better quality. The
nure should be applied the latter end of July
beginning of August, when the land should
ploughed in small ridges; the seed should
sown in October or November, according to
wetness of the soil, and its elevation above
sea. The elevation should mainly determine
time of sowing wheat. A field may in suc-
sion be sown with wheat and oats, and then
owed and good crops, with very moderate
nuring, will be obtained with great improve-
nt to the soil, and at less expense; for it will
uire less working and no weeding.

When potato or turnip ground is to be sown
h wheat, it will generally do better without
fresh ploughing; a scuffler or tormentor
l answer the purpose equally well.

From all that I have seen, too little attention
been paid to the time of ploughing; I mean
t the effects of land having been ploughed a
siderable time before sowing, have not been
ly appreciated. From my own observations,
m inclined to believe that most of the failures
ich occur in the corn crop, proceed from late
ughing.

Ploughing also, in the general way, is by far
shallow; and the reason that deep plough-
has in many instances failed, is owing to
seed having been sown before the land has
eived the necessary influence from the atmos-
ere for the purposes of vegetable production.
due consideration by the advocates of shallow
ughing, will convince them that my principle
correct. The very fact of their constantly
ploying or using only three or four inches of
e top surface, which is the only portion of the
d that they allow to receive this advantage,
ight shew them its truth; a double or treble
antity might easily be brought to the same
ate of tilth, and possess the same fertilising
alities.

All arishes intended for spring corn, or green
ops, should be ploughed down at full depth,
soon as possible after the corn is removed,
d allowed so to remain until after Christmas,
cept when very foul. In the latter case a
irting, and harrowing, and a cleaning of the
ed, might first be made with advantage; but
e deep ploughing should immediately follow.
e land should never remain with a smooth
rface, either in winter or summer, for in this
te it presents the least possible surface, and
s not the full advantage of the effects of the
mosphere. *As soon after Christmas as the
ather will admit, the second ploughing* should take place, and the land will then be in a fit state for tilling, in good and proper season, in the spring. The work in most places will be well done, with a tenth of the labour that is now bestowed upon it.

Within a month after Christmas all turnips should be taken off the land, and the ploughing for the spring crops should be performed as speedily as possible; for the reasons just mentioned.

The next subject noticed by our author, viz., "*depasturing seeds and meadows at improper periods*," is one to which we hope few of *our* readers are prone. The positive folly pointed out in the following words is so great that surely none can be guilty of it—that cold thin pastures are often depastured at improper periods, we have no doubt, indeed we often see it done, but then they are old pastures and not seeds—they are those thin-soiled grounds, which, under the management they have been hitherto subjected to, produce but a short pasture, and not much even of that; but really we cannot imagine a man chargeable with the following:—

Seeds in many districts are stocked and eaten during the whole of the autumn and winter, and often up to the end of April, when they are kept up for mowing. By this mode of stocking, the seeds are vastly injured, and not unfrequently altogether destroyed. A little consideration will convince any person, that eating those young plants, to the very roots, in frosty weather, and treading them under water when raining, must be sufficient to destroy them, if stocked with sheep only; but it is no uncommon thing to see bullocks and horses in seeds, in the depth of winter, treading and making pits in the land for water to stand in, one would suppose for the purpose of destruction. The value of the keep at this time cannot be equal to one hundredth part of the injury thus occasioned. Meadows too are constantly stocked until the middle and latter end of May; and hence one reason for the scarcity of hay, and the difficulty of keeping stock, during the next winter and spring. This difficulty unfortunately requires the same system to be followed up.

Of the last defect pointed out by our author, viz., "*Of spreading stall dung on the surface too late in the spring*," he observes:—

As the merits of farm yard manure have already and will again be discussed, I will only now refer to it, as connected with the practice of "doing things out of season." Vast quantities of this valuable manure are carried fresh and in an undecayed state on the meadows during the months of March and April, and even in May; and unless the weather is more wet than usual at this season, does but little good to the hay crop: and I believe often, not much afterwards, for the moisture which it possesses is quickly evaporated, and chips of wood might as well be spread and laid on the land as dung in this state. The loss therefore in comparison is very great.

To remedy this the dung intended so to be used should be all carted and spread in December and January, whilst the days are short and evaporation very little, or kept until properly rotten, and applied immediately after carrying the hay, when it should be spread and thoroughly brushed in immediately, and in either case it will be sure to answer a good purpose.

I am aware that many arguments may be used to shew that renters with short terms, want of capital, &c., cannot generally adopt these plans; but admitting all these evils to their fullest extent, I am sure, even in a seven years term, a vast profit would arise from adopting them.

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The Journal of the Royal Agricultural Society of England. Vol. V., part II. J. Murray, London. (Third notice.)

Mr. Bravender, F.G.S., Cirencester, contributes a paper "*On the Indications which are practical Guides in judging of the Fertility or Barrenness of the Soil,*" which he ushers forth with a very modest preface, in which he calls upon others "better qualified" than himself to come forward and explore the field to which he is certainly the first to draw attention. How far others who follow him may succeed in the task he has set them it were difficult to prognosticate; but, to our thinking, Mr. B. has taken so comprehensive a view of his subject that but little remains to be done in the application of broad principles: to test these, however, and to correct (whenever correction may appear necessary) the errors into which our author has, no doubt, frequently fallen, will be the duty of mere scientific enquirers. Our present duty is simply to draw the attention of practical men to the opinions of Mr. Bravender, and to that end we will extract such portions of his paper as may appear to us to be most likely to interest our readers, referring them for the main questions to the Journal itself.

Thus taking "*Vegetation,*" the writer's third head under which he considers his subject, we find that—

"The quantity and quality of the natural vegetable productions of any pasture-land are not only the principal guides in judging of the barrenness of soils, but at the same time the most certain of any. It is said "every tree is known by its fruit," and it might also have been said, with as much truth, that pasture-land is known by its natural vegetable productions.

"To ascertain the quality and probable quantity of produce to that degree of ce tainty which is desirable, the herbage wi require to be very closely inspected. I am aware that it has been customary to estimate the produce, and at the same tim the permanent capability of the land fo continuing that produce, from surfac appearances, without taking into consid ation the *description* of herbage which form ed the principal portion of the crop. I certain circumstances such an estimate wi be found to furnish a more accurate ide than could be expected; but, if the ju ment of the party thus attempting to gi an opinion has not been matured by exp rience, it will be folly for him to allow him self to be guided solely by such an unc tain indication as mere surface-appearanc

"It is well known that a man cann jump into all the necessary experience, have his judgment disciplined at once, at a period when he chooses. If so, ho then can persons without this experience— which is often the labour of a life—be duced to rely on surface-appearances, as sometimes, I was about to say frequently, the case? It is impossible that an accu opinion can be given of anything which uncertain. All mere surface-appearan are liable to change from sundry cau such as temperature, drought, too great abundance of moisture, manure, culti tion, &c. They scarcely ever remain th same for a week together. Then how ab surd to presume to judge from such al! On the contrary, if a man takes into co sideration the *description* of the herb knows what it is when he sees it, and name it, and at the same time knows f experiment made, either by himself or others who have preceded him, bage he sees is unproductive in favour- e circumstances of cultivation, or pro- tive in unfavourable circumstances, or a tendency to either, he can with ater confidence rely on the opinion he ally comes to being founded on, and ived from something possessing the cha- ter of certainty, having been tested and ablished by observation and experiment.

' The time of the year when examined, l a wet or dry season, often make a at difference in the surface-appearances, they never alone change the vegetation h which the land is covered. There is ifference in the state of the growth of ss: it is more luxuriant than usual, or contrary; but its nature and descrip- are changed only by a change of soil n a state of barrenness to fertility, and contrary. By making the *kind, descrip-* , and *character*, of the natural grasses servient to our purposes, and adopting m as guides to our judgment, we at e secure assistance of a more definite d, and our decisions, whatever they y be, partaking of the source from ence they are derived, cannot fail not y to be more satisfactory, but more ra- al and scientific.

' It is a common practice, when land is pected for the purposes of a valuation, to ke remarks respecting the herbage for ure guidance, such as the following:—

' The herbage is of a bad quality. The tom is mossy. The herbage is short, sweet, and thick at the bottom. This ce will produce very tough fodder; it is rse and benty. This piece will produce ugh, peaty, sour grass. This is covered th poor, benty herbage. And, where land is good, similar remarks of an posite character and meaning are made of.

'' Without meaning to dictate to any one, ropose that, in addition to these and all ilar kinds of remarks, in all circum- nces, the quality and *description* of the vailing grasses should be particularly ticed, for it is on those that the quantity produce depends, and which are sure ences of the barrenness of fertility of soil that produces them.

" I should be sorry hastily to condemn tablished practices, or complain of such being capable of supplying that kind of rmation which is expected of them. It lieved that the usual way of noticing herbage *of grass lands, and of allowing judgment to be made up or guided by ch observations as we have just* enumerated, must lead to uncertainty. It is true such observations, when made by reason of such appearances being very plainly exhibited, are indications of poverty or barrenness, and so far ought to be made use of; but, certainly in all matters of importance, there should be a test applied if one is known to exist. In matters of this kind one of easy application may be introduced, namely, that of ascertaining the prevailing kinds of natural grasses which are found to have usurped the greater portion of the surface of the soil. Here we shall find that we possess a test which is not only as certain as the nature of such things will admit of, but which is definite and universal in its application.

" To ascertain the prevailing kinds of herbage we must get at the names of the several grasses which we know, from repeated observation, to grow upon and occupy, almost to the exclusion of any others, the lands that are barren; and, having made a list of them, let some land be visited, and if certain grasses and herbage which are conspicuous in the list are found to occupy the greater portion of the surface, such land may safely be pronounced to be barren. An inquiry here suggests itself—" Why is it barren? Because it is found that the surface is occupied by grasses which are known from experiment to be unproductive. And why is the surface thus occupied? Because it requires a fertile soil to produce and bring to perfection a great quantity of produce of a good quality; and the reason why all soils do not naturally do so is because they are not fertile, that is, they are barren. And further, it is known that any surface occupied by natural grasses of an unproductive kind may be improved by manuring, and made fertile by a long continuance of good management. But barren land can never be made fertile without changing its herbage, and as certain as we begin to manure and improve our grass land, that herbage which is a never-failing indication of barrenness will gradually disappear, and will be replaced by that of a better kind, and the land will finally become clothed with good natural grasses, the presence of which is a certain indication of fertility.

" There are also other vegetable productions always present in pasture-lands which are indications of barrenness and fertility, and point out, almost to as great a certainty as those which constitute the principal produce, whether land producing them be barren or fertile. Those also are capable of being formed into a list and made use of, and are an admirable test of the ideas derived from previously-observed surface-appearances.

"Thus, by stating in our observations that certain lands produce this or that kind and description of plants, at the same time writing down their names, such observations will point out, in a definite and simple manner, the inferiority or fertility of soils much more distinctly than by stating that the herbage is coarse, sour, benty, and peaty. If the herbage be really coarse, sour, benty, and peaty, the names of the prevailing grasses found upon such soil will not only convey to the mind that such herbage is unproductive, but in addition, the certain knowledge that the land producing it is absolutely barren.

"The very appearance of many of the plants in the following list is a certain indication of the barrenness of the soil that produces them, but a few are enumerated that cannot be considered to be so decisive in their indications, and must be found in considerable quantities before they are put down as *certain*. Such are the daisy, plantain, cowslip, &c. Their appearance, however, is calculated in any circumstances to excite suspicion, and ought to be taken as an indication of barrenness, until it is found from examination that the proportion of the surface they occupy is not so great as to warrant their presence being taken as a decided indication.

"NAMES OF PLANTS, HERBS, FLOWERS, &c. and NATURAL GRASSES, which are indications of barrenness where they have elected to grow spontaneously, and where the Grasses are observed to have usurped the greater portion of the surface.—Agrimony, rough dandelion, common daisy, wood betony, clustered bell flower, Canterbury bells, heath bell-flower, prickliest thistle, early flowering rush, flea rush, flea sedge, star knapweed, blue bottle, and star thistle, white goosefoot, common ox-eye or greater daisy, moon flower, corn marygold, or yellow ox-eye goulans, creeping plume or cursed thistle, marsh plume thistle, smooth hawksbeard, foxglove, Whitlow-grass, nailwort, common heath, ling, hether, common eyebright, yellow ladies' bed-straw, cheese rennet, yellow goose-grass, ground-ivy, catsfoot, ale-hoof, tunhoof, common cudweed, chafe-weed, smooth catsear, hairy sheep-scabious, scabious sheep's-bit, rush, sieve, cammock, petty whin, ground furze, rest harrow, wild carline thistle, hoary plantain, lamb's lettuce, silver weed, barren strawberry, cowslip, primrose, yellow rattle, penny grass, coxcomb, henpenny, sheep's sorrel, or dock, fescue, wall fescue, smooth fescue, wall barley, woolly soft grass, creeping soft grass, wild sainfoin, purple melic grass, upright mat grass, minor meadow cat's tail grass, alpine meadow grass, flat-stalked meadow grass."

Our author also gives a list of weeds and timber trees, which are indicative of barrenness in soils, for which we refer our readers to the Journal.

Horticulture, &c.

CURIOUS PLANT.—At the last meeting of the Asiatic Society, a root of an Indian plant was laid upon the table, believed to be a Cardiospermum. The plant possesses the peculiar property of being phosphorescent. The letter of General Cullen, which accompanied the specimen, stated that the plant had been recently discovered by a Tahsildar, who had accompanied Captain Bean on a journey, and who, having been compelled by rain to take shelter at night under a mass of rock in the jungles, had been astonished at seeing a blaze of phosphoric light over all the grass in the vicinity. This man brought some specimens to Trevandrem. General Cullen stated that the plant, though said to be only now discovered, was known to the Brahmins. He enclosed quotations—one from the Amera Kosha; a second from the Kuma Sambhave; and a third from the book of Maghum, which mentioned it. In one of these quotations, the sun, called the *husband of light*, is said, when he leaves the earth at night, to commit his wife to the care of these plants, that he may receive her again in the morning. In another, the plant is celebrated as affording light to the lovers wandering about the Himalaya mountains. In Amera Kosha, the plant is mentioned by several names; among others, by that of *Jyotish Mati*, the shining plant! in Colebrooke's edition it is Englished by *He pea*. The root exhibited being dead and perfectly dry, it was doubted whether it retained any phosphoric property; but a gentleman connected with the society wrapped a small slice of the root in a wet cloth, in which he allowed it to remain about an hour; and he then had the pleasure of seeing it shining in the dark like a piece of phosphorus, or perhaps somewhat paler, more like dead fish or rotten wood. The plant is stated to abound in the jungles near the foot of the hills in the Madras district; and it was found in Burmah by Dr. Wallich.

ngs of Agricultural Societies.

Agricultural Society of England.—
eral May Meeting in London, on
, May 22, 1845; the Annual Country
at Shrewsbury, in 1845; principal
Show, Thursday, July 17; the gen-
mber Meeting, in London, on the
of the Smithfield Club Show-week;
loyal Agricultural Improvement So-
reland, Sept. 30, at Ballinsloe; High-
Agricultural Society of Scotland, at
Smithfield Club Cattle Show, in
, at the Horse Bazaar, Baker-street.
, in August, at Beverley; a paper to
it the Council dinner, "On the best
preserving and applying Liquid Ma-
Nottinghamshire, in Sept., at East
Rutland, Dec. 3, at Oakham. North
ire, July 30, at Gainsborough. West
une 18, at Swaffam. Great Torring-
North Suffolk and South Norfolk,
at Eye. East Suffolk, at Halesworth.
lorgan's Annual Show, in Dec. at

The Markets.

re difficult to pronounce upon. Wheat
everywhere small on hand, yet the
not advance in this country; on the
however, advances are claimed which
rto had the effect of limiting importa-
ere is a steady and extensive demand
, without the aid of speculative invest-
st compel the buyers to give way: but
to which they will be induced to give
in a great degree, depend upon the
upon that speculation mainly rests.
t plants are reported as looking well,
erally recovered from the effects of the
severe winter. Genial showers have
and should the weather take up soon,
rn of the dry weather recur, a great
no doubt result; the condition of it must
on the sort of harvest weather we may
e average general runs of best white
ill barely realise 7s. per imp. bus.

ling Oats *the market is over: feeding*
re quoted at 2s. 9d. to 3s. per imp. bus.

y is lower, large importations of foreign
ken place. There is but little in the
nglish growth.

Beans *have been in demand, which is mainly attributable to the scarcity of those which are home grown.*

Our advices from the stock markets are dull as usual. The Epidemic at present raging in many districts causes buyers at fairs to act with much caution. Mutton *still takes the lead in prices averaging a trifling advance over the prices of this time last year.*

Pigs *are scarce and dear.*

LONDON, April 28.		Per	Qr.
Wheat, Essex and Kent, new, red		46	48
White	46	50	55
White, old		52	57
Rye, old		32	34
New		36	—
Barley, Grinding		25	27
Malting		30	32
Chevalier		33	—
Irish		25	27
Bere		26	—
Malt, Suffolk and Norfolk		58	63
Brown		56	60
Malt, Kingston and Ware		60	—
Chevalier		65	—
Oats, Yorksh. & Lincolnsh., feed		21	22
Potatoe		24	26
Youghall and Cork black		19	20
Cork, white		20	21
Dublin		21	22
Black		20	21
Scotch feed		22	23
Potatoe		24	25
Limerick		22	23
Beans, Tick, new		30	36
Old, small		38	40
Peas, Grey		34	36
Maple		35	36
White		33	35
Boilers		36	38

Seed, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..38 44 Odessa..45
Mustard, White......12 15
Brown ....10 12 per bush.

Flour, Town-made 42 —
Suffolk.... 32 34 per sk. of 280 lbs.
Stockton and Norfolk 32 34

FOREIGN GRAIN AND FLOUR IN BOND.

Wheat, Dantzic		32	36
Hamburgh		30	32
Rostock		30	—
Barley		20	24
Oats, Brew		17	18
Feed		14	16
Beans	—	24	29

Peas	28	32
Flour, American, per barrel	19	—
Baltic	18	—

LONDON AVERAGES.

Wheat	3765 qrs.	£2	9	2
Barley	2877	1	11	5
Oats	28663	1	0	7
Beans	148	1	10	4
Peas	1151	1	12	8
Rye	204	1	14	11

SEED MARKET.

	s.		s.
Canary, per qr.	47	to	48
Carraway, per cwt.	44	to	46
Clover, red, English	45	to	50
„ „ Foreign	40	to	48
„ white, English	60	to	62
„ „ Foreign	50	to	62
Coriander	12	to	18
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000	£11	to	£11 5s.
„ „ Foreign, p. ton	£7 7s.	to	£7 10
Mustard, white, per bushel	12	to	14
„ superfine „	—	to	—
„ brown „	8	to	12
Rapeseed, English, per last	£24	to	26
Tares, English, spring p. bushel.	6s 6d	to	7 6
Foreign „ „ „	—	to	—

LIVERPOOL, Apr. 26.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℔ 70lbs.	7	2	7	6
Ditto, red	6	10	7	0
Irish white, new	6	3	6	9
Egyptian	5	9	6	0
Oats, Eng. mealing, ℔ 45lbs.	3	2	3	6
Irish	2	10	3	0
Welsh	2	9	2	10
Barley, Eng. malting ℔ imp. qr.	34	0	36	0
Grinding	0	0	0	0
Irish and Scotch	4	0	4	9
Rye, per imp. qr.	32	0	34	0
Beans, English, per imp. qr.	38	0	40	0
Irish and Scotch	36	0	38	0
Foreign	38	0	40	0
Egyptian, per 480lbs.	32	0	33	0
Peas, English, per imp. qr.	38	0	41	0
Foreign	35	0	38	0
Malt, per imp. qr., fine	60	0	62	0
Flour, English, per 280lbs.	35	0	38	0
Irish	34	0	37	0
Foreign, duty-paid, per 190lbs., U.S.	26	0	28	0
Canadian	26	0	27	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	24	6	25	0
Irish	23	6	24	6
Indian Corn, per 480lbs.	27	0	30	0

PRICE OF AGRICULTURAL PRODUCE

LIVERPOOL, Apr. 26.

Hay, best	1s	2d
Clover ditto	1	1
Green ditto	0	0
Vetches	0	0
Straw.		
Wheat	0	8
Oat	0	8
Barley	0	7

Potatoes.	s.	d.
Short tops	1	9¼
Red apple	0	0
Cups	1	9¼
Cattle	1	6
Turnips pr ton	26	0
Carrots	37	0
Mangle	29	0

Cattle Markets.

LONDON, SMITHFIELD.

April 28, 1845. ℔ st. of 8 lbs.

	s.	d.		s.	d.
Inferior coarse beasts	2	4	to	2	
Second quality do.	2	10	to	3	
Prime large Oxen	3	4	to	3	
Prime Scots, &c.	3	10	to	4	
Coarse and inferior Sheep	2	8	to	3	
Second quality do.	3	2	to	3	
Prime coarse woolled do	3	6	to	3	
Prime Southdown do	3	10	to	4	
Large coarse calves	3	4	to	4	
Prime small do	4	4	to	4	
Large Hogs	3	0	to	3	
Neat small Porkers	3	8	to	4	

LIVERPOOL, April 21.

	s.	d.	s.	d.
Beef, per lb.	0	5½	0	
Mutton	0	6¼	0	
Lamb	0	0	0	

MANURES.

Subjoined are the prices of several sorts of manure :—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. per cwt.
Guano, 10s. to 12s. per cwt., according quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. per landed and housed, 38s. to 42s. per
Nitrate of Soda, 16s. 0d. (duty pd.) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per sufficient for three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 6s. per cwt.
Compost, £3. 12s. 6d. per hhd. sufficient three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphuric Acid, 1½d. per lb.
Sulphur for Destroying Worm on Turnips, per cwt.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

JUNE—1845.

GRICULTURAL IMPROVEMENT.

RHAPS the most important problem to be ved in agriculture is the extent to which pital may be safely advanced in the genl improvement of estates. Any outlay atever for this purpose is too frequently grudged by the owners, and but little couragement is in a general way given the occupiers to make even the most mmon and necessary conveniences upon e farms they hold. Whilst this state of ngs continues—whilst landlords will not cannot, and whilst tenants ought not, ke any steps in the right direction, we of urse stand still—our occupation as advotes of improvement is gone—and the tional resources must as a matter of urse remain crippled and confined. But is open to us to enquire, as every reflece man is sure sooner or later to do, why is is so? How it is that British skill, enprise, and capital is directed into every any channel save that which would, we assured, carry with it a flood of rich muneration as well in pocket as in patric principle. Why is it that the abundant pply of capital possessed by Great Britain ould not be more generally employed in icultural improvement? Are landlords indifferent to their own interests as not see that by a judicious outlay the acree profits *from their lands may be conerably increased?* *We fear this is in* some measure the case. Mr. A. is the owner of 10,000 acres, which produce him clear £8000 a-year. He is the picture of contentment—has a comfortable establishment—his hunters are amongst the best in his county—his table is well arranged, and with rents moderated to meet the times, and paid with punctuality, his tenantry are thriving men, and Mr. A., in the fullness of his heart, looks no further; he is not aware that some 3 or 4000 of his acres would be amazingly improved by draining, and that the average wheat crops upon those acres would be increased from 25 bus. to 35 bushels per acre: or in other words that their value would be raised from £3 to £4 per acre per annum—this he thinks not of. On the contrary, his neighbour, Mr. B., who is similarly situated, and excellent neighbours they are, sees and feels that his 3 or 4000 acres need the improvement above mentioned; but how is it to be effected? Tom, his eldest son is at present on the Continent with his tutor, whilst his two younger sons are at college, being destined for professional pursuits, and Mary and Jane are growing fast to womanhood, and will require no less than their brothers some pecuniary arrangements in the event of their marriage, or the death of their father, beyond their shares of the sum charged for younger childrens' portions in the marriage settlement of their parents. Mr. B. therefore looks rather more strictly after the tenants, particularly on rent-days, and to any suggestion as to the advantage to be derived from drainage admits it to the full, but refuses with a sigh, because all he can save from his income is destined to the advancement of his younger children. He is told of the power he has (conferred by a late act of parliament) to charge the estate with the cost of the drainage, yet his dislike of mortgages and a want of due consideration upon the subject, induces him to refuse—we say a want of due consideration, because supposing the effectual drainage of the 3 or 4000 acres should cost (upon an average of £3 per acre) £12,000, to be charged upon the estate, and so found by the heir when he comes into possession, yet would he not be well satisfied when he finds that he comes into possession also of an increased rental of at least 10s. per acre upon the 4000 acres drained, or of £2000 per annum—equivalent to upwards of 15 per cent. upon the outlay; and would our friend Mr B. be making a bad investment for his son in creating this charge, which might in six years be repaid from the increased rental alone? These things, however, Mr. B. does not calculate—he does not give them the consideration they deserve, and the estate remains undrained. By the same rule and in the same way the income of a minor might in some cases be doubled during his minority, and, if a long one, every charge occasioned by the improvement fully paid off before the attainment of his majority.

The reclaimation and improvement of waste lands, too, offer a still wider field for the investment of capital than even draining, but they are not had recourse to for the same reasons—many a sheep walk, now let at from 2s. 6d. to 5s. an acre, is capable of growing almost any crop, were a moderate sum per acre applied judiciously to this *enclosure* and improvement—and many a *wild marsh* on the sea coast and in the estuaries of our great rivers would become highly fertile were they once brought under a system of cultivation, which might be effected at a light acreable cost.

Whilst considering the innumerable instances in which capital is *not* invested when it can with so much advantage be applied, we are insensibly led to the consideration of those cases, in which it has been so applied, either by the aid of individual enterprise or of joint stock capital. Foremost amongst the individuals wh have thus honorably distinguished themselves, stands Mr. Mechi, whose amazin outlay upon his estate at Tiptree, in Esse and the boldness with which he has ma publicly known all that he has done, h led to a free discussion of not merely h merits as an improver, but his motives a man—some asserting that he has ma this outlay and published it to the worl with a view to bring forward, and ma more generally known the trade he carri on in Leadenhall Street. Now witho imputing to Mr. M. any such motive a condemning generally the imputation motives, we do most heartily wish th every other tradesman in the country, *is able*, would take the same means of vertising his trade:—but to the more i portant question, viz., the merits of M Mechi as an improver. That his improv ments are well executed we have very lit doubt—with his apparent energy of cha acter—with his command of capital—wi the warm interest he has in his subjec and the means he appears anxiously have taken to inform himself before began, we cannot doubt that every dr on his farm works well, and every p of his manure retains, when applied to soil, its full virtue; and right sure we that his out of door labours upon the l may proceed satisfactorily at times and seasons when his neighbours on their drained farms cannot venture a horse their fields. He is told over and over that his outlay is excessive—that it ca pay—and from the tenor of a letter another column of our present number, find, that his neighbours in Essex deny e advantages to be derived from his deep ains and subsoil ploughing, proceedings ich Mr. M. himself is very well able to fend; but as to the excessive outlay, and at it cannot pay, we beg to observe that, we have in another part of our present pression stated) our conviction is that his tlay *will* pay;—a trifle over £70 per acre not an excessive price, within a reasona- distance of markets, for land which will ld on an average 35 bushels of wheat acre, for if it will give that, it will give nost any other crop under proper man- ment. There are no doubt many more ividual improvers besides Mr. Mechi; none, that we are aware of, have taken decided a step in the right direction.

he late Lord Leicester, by a judicious rse of management, we believe, doubled income from his Norfolk estates, be- es by his example encouraging other downers of that county to do as he did. Chaplin and other improvers have n the means, by a considerable outlay, making Lincoln Heath what we now it. Of part of this heath we cannot rain extracting from the *Journal of the yal Agricultural Society*, vol. iv. p. 298, following, premising that it is an ex- ct from the report of Mr Young in 1799:

> "Near Brocklesby, &c., there are large tracts excellent land under gorse; and at Caburn Swallow I passed through the same for les. It is a beautiful plant to a fox-hunter. rd Yarborough keeps a pack of hounds: if has a fall, I hope it will be into a furze- sh; he is too good to be hurt much, but a ent pricking might be beneficial to the ntry."

r. Pusey, who saw this land in 1842, says, *sup.* in alluding to it:—

> "I must say that when Mr. Handley pointed t to me this estate in 1842, then entirely known, its fine farm-buildings, on which 50,000 have been expended, surrounded by y ricks, its 30,000 acres of good turnip-land, ded by *clipped hedges of thorn,* where Mr. *ng saw miles of gorse, and of* course thousands of rabbits, I thought I had made the discovery of a domain equal in the spirit, magnitude, and rapidity of its improvement to the well-known estate of Holkham; and, having seen it again last October—though, in consequence I suppose of the weather, the turnips did not look so well as before—I think so still. Mr. Young was informed by the late Lord Yarborough that his wold-land then let for 5s. an acre, I may state that, tithe-free, it is now worth five times that amount."

We have before drawn the attention of our readers to this subject, when noticing Mr. Pusey's paper on the Improvements of Lincolnshire. Lord Ducie also has shewn, in his Whitfield Example Farm, what capital judiciously expended is capable of doing.

The improvements of late years made by joint stock capital have not been great, although this mode of effecting important agricultural advantages is not by any means of recent date; so early as the time of Charles I, a company of Dutch capitalists commenced the warping of the Lincolnshire fens, and various "Level Companies" have at different times been the means of draining and reclaiming from the sea large tracts of marsh and fen lands in other counties. By this means "The River Dee Company" has become possessed of some of the finest farms in North Wales—the original shares in which are now eagerly bought up.

Want of space prevents our pursuing this very interesting topic further at present; enough has been already advanced we hope to shew that the investment of capital in the improvement of the soil is safe and profitable, and that as regards the owners of settled estates it is a duty they owe to the heirs in tail, to drain at the cost of the estates. We shall, therefore, close our present paper with the words, slightly altered, of the Scotch Laird, whose constant advice to his son was, "To be aye sticking in a tree,"—we say to our readers, "be aye laying out a pound," and be assured that, if laid out with judgment, it will, like the "bread cast upon the waters," return to you after many days.—C.

BONES AND SULPHURIC ACID.

Every season has its "lions." The world of politics — of religion — of science — of speculation, and even of poor agriculture amongst the rest, has now and then bubbles cast upon its surface—so varied—so resplendent with glittering and varied embellishments, that the eager hand grasps the bubble, and it bursts and dissipates in nothing but "thin air!"

The day of chartist regeneration — of Johanna Southcote—of flying machines—of "south sea schemes"—nay, of Cæsarian cow cabbage, is gone by, and the lion of 1845 is bones dissolved in sulphuric acid, by which process all fear of exhausting Waterloo and Austerlitz are removed, for two bushels of bones are by means of this "solvent," to work the work of twenty!

If this had been an individual speculation it would have been of little use to notice it; but the Royal Agricultural Society has petted and rewarded the notion, and Mr. Hannam has had a prize awarded for detailing this as the "best experiment in agriculture;" and Mr. Pusey is anxious to give it out to the farming world in railroad speed, that they may all use it before turnip time.

The cheapness of the vehicle—the general saving to be effected by it—the defiance in which it holds the bone crushers, great and small, from the puppy who gnaws a rib to the steam devil which torments a skeleton. Henceforth we shall see a sackful of bones and a carboy of vitriol—we beg pardon, sulphuric acid; it must not now be called by the dreadful name of *oil of vitriol;* and we shall ever and anon hear the bubbling effervescence, and see the fiery and poisonous smoke issuing from every corner, and here will be a man consuming his lips by putting into his mouth his *burnt fingers,* and there the clothes dropping off his back as if by some magician's enchantment, all *the result* of that universal solvent, the gin *adulterant* of the London *Tom*-shops, which *is at once to* dissolve the stern remains of mortality—to melt down the ghastly and grim old skeleton death into water, and to make turnips rise up like mushrooms—to be a conductor of vegetable nutrition hitherto undiscovered.

Every person knows that bones contain phosphorus, lime, and gelatine: these are their sole fertilizing components, speaking generally. Sulphuric acid will make no further change perhaps than, by renderin all more soluble, and allow them to give o their nutriment to the plant more readily. So far so good.

It may act also beneficially upon so soils; where lime is present in the soil a carbonate it will convert it into a sulph (gypsum), and it may dissolve inert veg table matter, and may, by these vari actions, set free much carbonic acid g from the carbonates, and thus aid vege tion materially. But that it can or w make 2 or even 4 bushels of bones equal 16 or 20 in their raw state is a theory whi no fact yet produced has tended to est blish, and a moment's philosophy will right Mr. Hannam's hypothesis, and be caution to all farmers to beware of the "royal" roads to the minimum of fertili ing power.

From the fact that this is a *solution* it i differently applied from the raw bones necessarily so; raw bones are just drill in the ordinary way; careful ridges made for the liquid, that are as careful covered up, and thus the benefits of t *ridge system* is applied to the one and deni to the other. Every one knows the pri ciple of the ridge system. It takes the off A and places it upon B; it then takes off C and places it also upon B, and th if the soil has any elementary substances it, a double portion of them are secured, a the ridge of a stich, and the soil is deepe one-fourth or one-third more than wh the unfortunate raw bones are drilled the level. Mr. Hannam's experiments so described at least, as are those of th Duke of Richmond, and Mr. Willi ıile in the others no mode of application described.

Instead of this being the most satisfactory periment ever described, it is perhaps most utterly unsatisfactory—a baseless ory—a wild jump at a conclusion—a shing together of science and practice, l not a testing of the one and the other.

)ne of the best series of experiments per- ıs ever made are those of Mr R. Russell, ster Kilwiss, near Auchtermuty, in Fife- re, to which the prize of the Highland iety was awarded, which set this matter ıt, and in every instance shew how base- and erroneous are the conclusions so tily jumped at by Mr Hannam, as a boy ıps under the application of the ferula of pedagogue, and the royal agriculturists tch at as an hungry hound to save a ıll bone, or as "Smike," in Nicholas leby, gaped for Mrs. Squeers's treacle brimstone to save Wackford Squeers's theboy's beef, and "twenty pounds," ominous sum for which young gentle- n were "boarded, lodged, educated, &c." awarded for the discovery.

eriously, however, Mr. Russell's experi- nts make out this: That bones in their state were superior to dissolved bones 8½ cwt. per ¼ acre—by 12 cwt. per rood another experiment, both on turnips; t raw bones were superior to dissolved 11 bushels per acre in an experiment th oats, and that they were 4 bushels per te worse than nothing in another also on ts. The details may be seen by referring his very valuable article in the Highland ciety's Journal.

In conclusion, will any person be found ho will risk *a crop* upon the evidence, and th the health and lives of his servants, til more is known about the action and ode of application?—*Dubitantem, May* 12.

ON IRRIGATION.

E general good effects of irrigation are w tolerably *appreciated, at least* by all *se who have given the subject* attention. It is well understood how irrigation imparts fertility, by affording, through the medium of running water, variously impregnated, the elements essential to the growth of plants. On this it is not necessary to offer any remarks.

But the benefits resulting from irrigation are even more extensive, and in one particular, have not been sufficiently insisted on, if at all. I allude to the warming influence of running water, so well fitted to promote active vegetation, and to counteract the chilling effect which is so often witnessed in our climate in clear, calm nights, especially in spring and autumn, owing to radiation of heat from the surface of the ground to the upper regions of the atmosphere, and indeed into boundless space. The month of April afforded a striking example.

During the greater part of the month the weather here was dry and clear—the sun powerful—the heat by day considerable, and yet vegetation made little or no progress. Nor was this surprising; the nights during the same time having been clear, calm, and very cold, with hoar frost—the effect of radiation, the thermometer, which by day was commonly at or above 50°, and in the sunshine very much higher, at night often falling below 30°. Towards the end of the month there was a change of weather, with rain and cloud, and these (one or other) every night since, (one clear night excepted,) accompanied by an equable temperature, ranging in the 24 hours between about 48° and 55°. The joint effect of moisture, and of moderate uninterrupted warmth, has been quite marvellous: there has been quite a burst of vegetation; the meadows in a few days have acquired their bright green hue in perfection; many trees have come into leaf, and even the leaf-buds of the oak are unfolding.

What this change of weather effected illustrates what may be accomplised by irrigation—it may be considered as an example of irrigation. Most springs and streams in the month of April are of about the temperature 50°, and but little lower at night. Supposing water at this temperature to be employed in irrigating a meadow at night, instead of its temperature being reduced to or below 32°, arresting active vegetation, it would be preserved at a height between 40° and 50°, promoting vegetable growth.

Common experience may be adduced in confirmation of what has just been stated. In this hilly country, on the fells of Westmoreland, natural irrigation to a small extent is frequently to be seen, and invariably attended by unusual verdure and growth of grass.

As irrigation is employed in this county, and I believe very generally in England, it is chiefly had recourse to during the summer months, and when there is want of rain; it is not used in the early months of spring and the late months of autumn, when it might be a substitute for mild rain. Is not this a mistake of a serious import, and is it not very desirable that it should be corrected? Where there is a command of water, an early crop of grass, by means of irrigation, may be forced in the cheapest manner, and when most required, and even in winter as well as in spring and autumn; but it is in early spring that it is likely to be most profitable.—*D., May 7th*, 1845.

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DRAINAGE & INCLOSURE BILLS.

These important bills of Lord Lincoln, and therefore of the Government, will no doubt pass during the present session. We have not had an opportunity, as we hoped we should have had, to place before our readers in our present number an abstract of the provisions of each, and to have offered our opinion upon those provisions. This much however we may with safety say, that unless the machinery of them is very simple, and (we are warranted in this conclusion by the opinions of several high *authorities*) that, without extra aid to the *landed interest*, little advantage can be taken of the opportunities thus offered by the legislature for the improvement of estates—money, without which nothing can be effected in the way proposed, is lamentably deficient amongst both landlords and tenants: it is true that here and there, in every part of the kingdom, are to be found large proprietors who have the means, and who have already done much for the improvement of their estates; but by far the most numerous cases are of those who, if they are to take advantage of the powers conferred by Parliament in the bills before us, must do so by the aid of borrowed capital. It becomes our duty, therefore, to point out the means by which this borrowing shall be most economically effected. Let us consider then the position in which a landowner who requires £10,000 to effect the drainage of his estate may be placed. His first step is to make his wishes known upon the subject, when an offer will no doubt speedily be made to him of the sum required, at 3½ to 3¾ per cent. per annum: which he accepts; the loan is then completed, and a sum of certainly not much less than £200 is paid by him for procuration and other legal charges; these payments reduce the advance to £9800: this sum when paid to him he is compelled to deposit with his bankers, to be withdrawn as it is required, at say 2½ per cent. per annum interest, by which simple transaction he loses 1 per cent. per annum, being the difference between what he pays and what he receives, or nearly another £100 in the first year, which loss, it is true, will diminish yearly as the money is withdrawn. He has in the meanwhile employed such drainers as his neighbourhood may afford, and made contracts with the nearest manufacturer for tiles and soles, at prices say at the lowest calculation, for various sizes, of from 16s. to 26s. per thousand; and his total cost per acre may vary for cutting, laying, and filling in, including the tiles and soles, from £4 to £6 per acre. He drains 500 acres each year—a large extent for an individual

execute, and is just four years in expend-
g his £10,000, which, whenever repaid,
ust be so in one sum to afford the owner
it an opportunity of reinvesting it. Now
en in this costly mode of going to work,
our opinion, the outlay will be found
ghly remunerative; but suppose, instead
taking up a large loan as we have de-
ibed, a joint stock company, those esta-
shed in Yorkshire or Devonshire, for
tance, were had recourse to, the £10,000
uired would be advanced as the work
ceeds, and would only bear interest
m the time of its being so advanced, the
e being the same per cent. per annum
in the former case: no charge for pro-
ation would be incurred, and but a very
ited sum for legal expenses; nor would
re be any loss of interest on a banker's
posit: the company would make its
n tiles and execute its own work: the
of the most scientific men (Mr. Parkes,
nsulting engineer to the Royal Agricul-
al Society of England in the one case,
d Mr. Smith, of Deanston, in the other,)
uld be called in to point out the depth,
ection, and frequency of the drains, the
t per acre most probably running from
to £5, and the work being performed
der the close inspection of the officers of
company, would be effectually execu-
d; and which is almost the best feature
the plan proposed, the money expended
uld be repayable in the most convenient
de possible to all men of fixed incomes,
., *by installments.*

Can any man, therefore, doubt what,
der the circumstances, should be done,
render the contemplated measures of the
vernment really effective. Let some of
principal landowners, whose position
the country is a guarantee that they do
themselves stand in need of the aid
have above described, be associated
several capitalists of respectability and
ctical farmers of eminence, in the for-
tion of joint stock *companies, for the
pose of offering to the whole kingdom* the advantages we have described, as conferable by the Yorkshire and Devonshire companies—let them appoint active and honest men as their officers, and let them have power to purchase and hold land, and to make leases for lives and years: by these means and by the enclosure and reclamation of waste land, the profits of such companies would be ample—there would be no speculation in the matter—the capital embarked would be safer than upon any other joint stock investment whatever, equal in point of fact to that of the landowner himself—and an impetus would be given to agricultural improvement, which would render us speedily independent of foreign nations in the production of bread corn, and draw into firm bonds, those of mutual interest, the two great parties of the empire, viz., the landowners and the capitalists.—*O.*

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ON PLOUGHING.

In compliance with my promise in my last, I here give you a few of my opinions on ploughing, I shall divide the subject into three parts. First, Ley ploughing. Second, Broken land for a corn crop. Third, Ploughing fallows.

First, Ley ploughing. To do this with accuracy, and with most ease to men and horses, requires the greatest skill in both ploughwright and ploughman. The latter should so far understand his business as to be able to point out any defect in his plough. If he is not up to this he should go to school, but not to the university. He must go to some clodhoper, who is master of his work. He should also equally understand how to yoke the horses to the plough. If every thing is not properly adjusted the work cannot be done well, with the least exertion to man and horse, however good the workman may be in other respects. To be careless in unnecessary labour is to throw money away, and the farmer must look to this; of course it is necessary that he should be able both to understand a plough and to hold it. Whenever I see a man labouring in his shirt at the plough, except in very hot weather, I conclude there is something wrong. To a good ploughman, with a good plough, and every thing properly adjusted, the work is easy.

I do not like the present make of Scotch ploughs so well as "Small's improved Scotch plough," for several reasons. It is more difficult to hold, and of course heavier work for the horses. They also leave the solid ground, under the furrows, serated thus,—(uuuu) and the angles prevent the water getting into the open furrows or reins. On undrained heavy soils this is a great evil.

In ploughing old grass for oats the depth of the furrow must be two-thirds of the breadth, or the work will not be good. If *less*, the furrows will lie too flat; if *more*, they will stand too much on their edge, and there will be a great loss of seed. Some farmers are in favour of ploughing only 4 inches deep, as by this a greater number of rows of corn will be grown in a given breadth than with deeper ploughing, and of course broader furrows. I should never in any case recommend less than 6 inches deep, but should prefer 8 inches deep. In this case the furrows would be 12 inches broad, and of course have only half the number of rows of corn upon a ridge, as he who ploughs only 4 inches deep. Old ley ploughed 4 inches deep cannot produce much loose mould in harrowing, and what there is is full of grass roots, and requires double the time for harrowing and ploughing also, to that ploughed 8 inches deep. The deeper old ley is ploughed, and the easier it is harrowed, the better the seed will be covered, a less quantity will answer, there is less risk of the grub and of drought, and more loose mould for the crop to grow in. It is not the greatest number of rows of corn in a field which produces the best crop, but where the plants are most vigorous and clearest from grass or weeds. To plough deep, in old ley, is quite as easy for the horses as shallow ploughing, because the ploughshare goes below the grass roots in the former case.

In ploughing old ley, in the autumn, intended for potatoes or turnips the following season, the common practice of ploughing as shallow as possible is quite right; but i this case I should give the land anothe ploughing, very deep, before the winte sets in, except I intended to delve the land with the spade, and put the turf below.

When the ridges are very high and broad in old ley, and a crop of oats is intended to be taken, the best way is to plough it into half ridges, as it is impossible to raise the ridges sufficiently by the common metho of ploughing crown and furrow. This i common in Scotland on stiff soils. Th land is easier to plough, the water can g better off the land, and the crop will b better. In ploughing the land on this pl the ploughman takes his first furrow o each side the ridge to the full depth, a 18 inches from the side of the old furro or reins. They will thus fall over to th *side* of the old furrows, but not *into them*.

Mr. Smith, of Deanston, recommends t land to be cultivated flat without open fu rows, or with as few as possible, when it i thoroughly drained. But if he had farme a stiff clay soil in Lancashire or Chesh for twenty years, and paid a rent for it, would not, I am satisfied, have done s however well the land had been draine I have drained clay land quite as well a he ever did, but still it would not do cul vated on the flat. It may do on light so anywhere, and also on heavy ones perha in the eastern counties of Scotland, and i the south of England.

Second, Ploughing broken land for a crop of corn. Suppose the land a wh stubble, the soil a stiff clay or strong lo and the ridges from 4 to 5 feet wide a well raised. Suppose the succeeding cr to be barley or oats, and sown with clov and grass seeds.

It is of importance in this case that t

idges are well formed before the new crop r crops be sown. If the wheat ridges are ot above 5 feet broad three may be put gether, which requires a little manage- ent to do the work well. The common an is to fallow the ridges down in the tumn with a thin furrow, throwing the rrows in such a way as to prepare the land r making three ridges into one the spring llowing. This plan will make good work well executed. I recommend the wheat lges to have a full deep ploughing imme- ately after the crop is removed, and the lges left of the same breadth by merely versing them. The soil will then receive e full benefit of the frost in winter, which of great service to it. In March, when e soil is sufficiently dry, split every third lge, and skim-plough the remaining ridg- , throwing the soil of each towards where e crown of the new ridge is to be set. hen the land is well harrowed gather the dge and half on each side into one ridge a clean deep furrow. The *breadth* of e furrow to be no greater than the *depth.* his will leave a well-formed, well-ploughed dge.

If the wheat ridges are 6 feet broad, two rown together are sufficient. In this se I should give the land a full deep oughing in the autumn, by reversing the dges. In March following skim or half- ough each, throwing the soil of two ridges wards the furrows between them, where e crown of the new ridge is to be set. arrow well and gather the ridges as in e former case. In either case I should commend not to skim-plough and harrow ore in a morning than can be ploughed p the same day, as, if rain should come, e soil will dry quicker when not disturbed. n my plan the expense is one ploughing ore than the common plan; but, I am tisfied, any one of the following crops ll more than repay it twofold.

Third, Fallowing. All stubble land in- nded for potatoes, *turnips, beet,* cabbage, *ans, or plain summer fallow,* should have a clean deep ploughing after harvest and left in ridges all winter. In the spring let the ridges be well harrowed and ploughed down by another clean deep ploughing, taking care that the ploughman never takes a furrow so wide, but every inch of soil be turned over to one uniform depth. After this, with care never to go upon the land when out of condition as to moisture, no more ploughing will be required in preparing the land for the crop, if a proper use be made of the cultivator, the roller, and the harrow.

For a plain summer fallow, another ploughing or two will be necessary. *One deep clean ploughing in dry weather* is worth *three bad ones* in any weather. In all cases of fallowing, without the eye of the master, an unprincipled or careless ploughman will pay more attention to what is called "*blacking*" the land, than doing the work well, and will appear to have done a good day's work when it is not half done. And I am sorry to say that too many farmers pay more attention to the "*blacking*" system than to *real utility.*

Some farmers condemn deep ploughing upon some soils: they say the land comes full of weeds after it. Now this very fact of weeds growing thicker and stronger is a proof of the benefit the land has received from it. If a good crop of weeds will grow, real useful plants will grow, and he is not fit to be called a farmer who does not know how to destroy weeds. It is admitted by almost all men, who have paid attention to the cultivation of land, that by the use of the spade better crops have been produced than by the plough. Now the only difference is, the spade goes deeper than the plough generally does, and goes to one uniform depth, and leaves no part of the soil unmoved. A bad use of the plough has done more injury to farmers and the country than any one thing connected with agriculture. It has set landlords against the use of it, and has caused them to insert clauses in their agreements and leases which I believe never would have been inserted, and which are a curse to all active, honest, intelligent farmers.—*W. Rothwell, Winwick, May* 23.

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THOMAS TUSSER AND ROMAN AGRICULTURE.

"Know thou, with equal hand to hold the scale."
Dryden's Persius, Satire 4, *verse* 10.

Having in a previous number endeavoured to do justice to individuals whose characters had been treated most unceremoniously by a writer who, I trust by this time, regrets his precipitation; and having, I hope, established the right of your well meaning contributors to convey, through your medium, useful information, without being subjected to premature opposition, or impeded by captious obstructiveness, or the veto of any one but yourself, I shall, on the present occasion, aim at briefly correcting the erroneous impressions which certain sentiments advanced by the party referred to are calculated to produce; in doing which, I shall endeavour to avoid personality, though it is obvious that, in contending with error, it is as difficult to keep from touching its author as it is to avoid hitting a hostile combatant in the attempt to disarm him. Observing the same tendency in multitudes, which I sometimes find in my own case, to shelter oneself from the trouble of investigation, behind any reasoning tolerably plausible, I shall not be surprised to find that the cautions against stall-feeding milch cows which appeared in one of your recent numbers have been laid hold of by some as reasons for standing still on the subject, circumspection being a capital shelter for listlessness with many of us, and prudence a convenient defence against invitations to improvement.

The writer referred to remarks, "That to house milch cows in large airy buildings," during bad weather, "is absolutely necessary on the generality of farms;" "at the same time," he observes, "it is essentially necessary that there should be attached to the cow-houses a *spacious*, well-littered, well-drained fold yard, *into which* the cows may be turned out, for two or three hours at least, in the middle of every moderately fine winter's day; and it is equally essential that the houses themselves should be cleaned out and fresh littered each day." Now these "large airy buildings, &c.," are somewhat expensive materials to be thus talked of as a sort of extra convenience or supernumerary apparatus which farmers are to have by them like umbrellas for a rainy day. In stall-feeding these form the *main part* of the machinery for paying the rent and carrying on the system, but here, in addition to the waste and cost of pasture feeding, farmers are recommended to sink large sums in "large buildings" and "spacious yards," to be *occasionally* employed only, instead of being made *permanently profitable*. That I approve of cow-houses as well as all other houses (except "poor-houses") being made to yield a full year's residence for a year's rent I need not assure you, more than that I think "airy" shippons and airing ground "indispensable" to stall-feeding; yet you find me censured by the foregoing authority for quoting six lines of an old English rural poet's in support of such provision. At the same time, however, it will be remembered, I complained that in searching Tusser for information I met with *none* directly bearing upon the subject of my enquiry, although he admits that housing in winter is beneficial, in the lines—

'The housing of cattle while winter doth hold,' &c.

Now, so far from quoting "Honest Tusser" with reverence, and "placing upon his authority such reliance," it is obvious that I *could not* rely upon what *I did not find in him*; and as for "reverence," I am rather sorry to confess that I did not yield to its influence so far as I might safely have done, of which, by way of variety and of amusement to your readers, they shall have an opportunity of judging, in the perusal of an *original* biographical sketch of Thomas Tusser, the British Varro, forthcoming for your next number.

Cuthbert Johnson has recently favoured the public with some interesting biographical notices of this worthy ruralist, from which I shall content myself, on the present occasion, with quoting the sentiment that, "In whatever capacity he at various times lived, he acted with and that, "As a farmer, it is evident sed a correct knowledge, from his work subject." It is curious that your dent, while he is displeased with me ring of Tusser, (who wrote in Eliza- ne,) is disposed to carry us back 1500 her in quest of agricultural tuition, to and climate of Virgil. Of the merits mans as farmers some of your readers for information, on seeing it written age. "It is questionable whether the e of the Roman poet farmer, in the ent of his Sabine farm, is not more to upon than that of 'Honest Tusser,' relieve the monotony, therefore, of rward writing, allow me to indulge in isode on

ROMAN AGRICULTURE.

permits her various gifts to fall,
ous climes, nor smiles alike on all:
tian Vales eternal verdure wear,
wers spontaneous crown the smiling year,
o manures a wild Norwegian hill,
e the jasmine or the coy jonquil?
ds the peach among the savage sloes,
leak Scythia seeks the blushing rose?
lden grain waves o'er the teeming fields,
re the vine her racy purple yields."

Fenton's Epistle to Lambard.

an eminent Roman poet, was born 70 re Christ. He lost his patrimonial en a young man by a process rather mary than an English chancery suit, ry of Cremona, in which it was situ- ng been given up to his soldiers by (by way of pay or prize money, be- inhabitants had favoured the interests l Brutus;) but having written a poem ased Augustus his farm was restored Of this poem and its morality the less better—suffice to say, that Hogg the hepherd deserved the farm he got from of Buccleuch for *his* rhymes much Whether Virgil managed to grow his e from smut I cannot say, but he cultivated his poetry better in that nd his crops of it were unquestionably remunerative of the two. He became of Latin poets, and it is to the praise ture that of all *his poems those* upon *fairs, called his Georgics*, are the most perfect and finished compositions the world has yet produced. Of the Roman agriculture, however, upon which he writes, we may remark that hedges were rare, and still more rarely *green*, being *dry* fences, "liable," as Pliny tells us, "to destruction by the torch of the mischievous passer by." Varro recommended them to the Roman farmers for this reason, "that the *boundaries* of your farm may be evident, and that quarrels with neighbours may in consequence be avoided," which may serve to explain what Pliny says about their being occasionally converted into bonfires, after the true Irish fashion, and from which it is evident the pedigree of Mister "Swing" is rather ancient.

Farm labour among the Romans was performed by *slaves*, and their management, therefore, of their labour department will hardly be capable of application to Britons. The food of their servants was beans, but without the bacon, and their drink was usually vinegar. Among their farm produce were conspicuous, grapes, olives, lupines, beans, pears, figs, and various fruits and nuts. Their teams consisted of oxen which were fed on beech nuts, chesnuts, grape stones! lupines, chaff, vetches, and oak, ivy, elm, vine, poplar, and fig leaves, to help out the hay and straw, which it appears were not abundant; and says one of their writers, "throstles dung is capital for pigs and oxen, and no food fattens them sooner!" a circumstance which it is a pity the guano merchants have not been aware of, as that article might have been applied Roman fashion, as food first and manure after. Their harvesting was somewhat curious, for they bound hay up *in the field* in 20 pound bundles, and so carried it away into a barn, and they portered their corn *loose* into the threshing floor, which naturally leads to the enquiry whether their climate was like our's, and if not, whether it be possible to import Italian sunshine as easily as Italian silks, along with the Sabine farm management admired by "Festina Lente."

The Roman corn mills were small *hand* querns, and the lupines of which we have spoken were generally ground into meal, which meal was sold in the towns for washing with, as well as for food, this meal of lupines called *lomentum* being used, as Sir William Gell informs us in his Pompeiana, instead of soap by the humbler classes. Horses were in such limited use *among farmers* as to be employed principally in rearing mules, the ploughing and draught work being performed by oxen, to rear which was the *principal* use of what cows they kept, the little milk used by the Romans being that of goats. In the construction of ploughs used by them, they appear to have been their own ploughwrights, each farmer in the forming thereof doing that which was right in his own eyes; and the varieties, therefore, in use among them appear to have been as many as their *artlessness* was striking, each farm having its clumsy implement, *sui generis*, of its own peculiar kind.

As no subject connected with Roman practices has been more fruitful of controversy than these said Roman ploughs, I shall content myself, on the present occasion, with saying, that to this day the plough described by Virgil in his first Georgic, (line 169,) in the passage commencing "Continuo in Sylvis * * ," has never yet had its true form ascertained, and if your correspondent be acquainted with it he is cleverer than Dickson, Spence, Professor Martyn, Stawell, and others, who have not yet agreed upon the true make of the Sabine plough: that it was clumsier and ruder than anything of the kind employed by Tusser is palpable enough from other passages as well as the foregoing; there is, therefore, no fear of its superseding the iron ones made by Finlayson and others in our own day. That Virgil was a close observer, understood soils, and farmed well, I readily allow, but he was confined in his views by the hereditary practices of those about him. Thus he says at line 215 of the first Georgic, "Vere fabis satio," *set beans in spring.* On this passage Pliny expressly remarks that it was the manner of *his own neighbourhood*, "*circumpadanæ* Italiæ ritu," on which point he, with Varro and Palladius, differs from Virgil. Pliny approves of flax being sown as at this day *in Ireland, in* the spring; Virgil's instructions *are in favour* of autumn.

I have not space to exhibit the superstitious and fabulous notions identified with Virgilian husbandry, but will briefly observe, in the words of a superior writer upon this subject, that "as the Romans made few advances in science, consequently they made equally few in divesting themselves of the superstitions of their ancestors: these entered into every action and art of that people, and into none more than agriculture. In some cases it is of importance for the general reader to be aware of this, as in the case of heterogeneous grafting, and the spontaneous generation and transmutation of plants, which are known to every physiologist to be impossible, though stated as facts by Virgil, Pliny, and others: but some of their statements are too gross to be entertained as truths by any one, as the lunar days, the impregnation of animals by particular winds, &c. It is impossible not heartily to concur with Lord Kaimes in congratulating the present age on its delivery from such fetters." Nor will the dairy farmer be inclined to respect your correspondent's recommendation of a husbandry which cultivated olives, and the Sesanum or oily grain, in lieu of butter, and occasionally salted curd for winter use in a manner somewhat similar to German "sour krout." Indeed it is difficult to find in what points "Honest Tusser" was inferior in his farming to that of men who are so admired by 'Festina Lente.' In some things they certainly surpassed Tusser and ourselves, for they reared quantities of *fresh* fish in ponds, and fed upon them *salted*: they were too wise to make geese their care, which Virgil very elegantly abuses, but then they spent plenty of time upon pigeons and upon their aviaries for blackbirds and throstles, of which last one Roman farmer took to market five thousand in a year. Peafowls had a large place in Roman farmeries. Beef and veal were not very important matters with them, but then they dealt largely in *Dormice;* and though they differed from Tusser and our Irish farmers in their breeding of pigs, and in their estimate of pork and bacon, they surpassed in the propagation of other stock considered by them important, a *cochlearium* for snails being as common in a Roman farmery as a piggery in an English one. I am quite sposed to do justice to men of every age and untry; but with such features before us, and th the contrast also in view between Italian mates, soil, and manners, and those of the itish Isles, and bearing in mind also the provements which time, since Virgil's days, ust have given us, I venture to believe that ur readers will pause before they allow themves to be carried one thousand eight hundred ars back to Sabine farming; and that they l, notwithstanding any advice to the contrary, d a patient ear to what modern times have advance in favour of the stall-feeding of lch cows, through the pen of their devoted want,—*Hark Forward!*

◆

COLT'S FOOT.

HALL feel much obliged if any of your rrespondents can tell me the best method eradicating that endless pest, called olt's foot," a weed which completely er-runs some of my land, to the utter clusion of any crop. The land has been ll under-drained, and I double-dug or nched four acres of it last year for potaes, but really the "colt's foot" appears onger than ever this spring, threatening e failure of a large portion of the barley th which it is sown. As several of my ighbours are sufferers, and like myself, norant of any effectual remedy, we shall xiously look for a notice of this communation in one of your earliest numbers.—*sticus*, *May* 24.

◆

ON SCOTCH PLOUGHS.

ITH your leave I would beg to make a w remarks on those of your correspondent r. Rothwell, on ploughs and ploughing, I think I recognise him as an old and lued correspondent of my own. Hower, as he has been pleased to advance e rather grave charges against the prent Scotch ploughs, it may be necessary ay a word or two in their defence.

In the first place he seems to think that l utility is less *considered as a matter importance than beauty, in the* work performed by the Scotch ploughs. This is surely a most unwonted, I may say, unnational offence, of the canny cautious Scotsman, but it may perhaps not be difficult to prove that, in the words of the poet, "beauty and good are one," and that obtusity or acuteness, whether intellectual or terrestrial, are merely relative terms.

It would take much more space than your columns can afford to enter fully upon this, to farmers now a most extremely interesting subject; but I will put Mr. Rothwell so far right, by informing him that the present Scotch iron plough is so flexible and proteus shaped, that by the assistance of a clever blacksmith, any intelligent ploughman can alter and modify his plough irons to cut a furrow at any angle he pleases, within certain limits, say from seventy-five to ninety degress. He can also, at a trifling expense, vary his mouldboards to suit the soil and the season, and with the help of his hammer and screwkey exchange a concave for a convex mouldboard, and *vice versa* in endless variety. With the old wooden plough this was impossible.

I must now come to close quarters with my old friend Mr. Rothwell, when he ventures to assert as fact what is madly erroneous. To be brief, easy harrowing, he says, is all that is gained by an acute angled furrow. "The seed, he says, will be no deeper or better covered." I beg with all due deference to dissent from my friend's dictum here. I insist that the seed will be *deeper* covered, if not better, "did I say better."

Opinion is of no use in a case of this kind, as the point in question can be decided by geometrical demonstration. And I may be allowed to add, that in breaking up leas on any soil, a certain acuteness of the irons (*i. e.*, of the coulter and sock) is absolutely requisite in order to bury the sward, otherwise there will be no doubt a soft and verdant bed for the seed, but eventually a very hard one for the farmer.

I have only one more remark to make and then conclude. Mr. Rothwell states that Small's plough had only one fault, the flatness of the mouldboard at the breast, but he does not advert to the position of the left hand stilt, forming a straight line with the beam, thus preventing the ploughman from walking at ease, and permitting him to exert the full power of his muscles in directing the implement and managing the horses.

I have omitted to notice the statement of Mr. Rothwell, regarding the concavity of the sole in Small's plough as being three inches. I should consider three-eights of an inch as nearer the mark, and about the same for the land-side from point of sock to heel.

In regard to the heel of Small's improved plough being only eight inches behind the insertion of the sheath, such measurements, mortices, and insertions, are now happily done away with, since the introduction of iron in the construction of the plough, as we now dispense with mortice and tenon entirely, and form the whole land-side of the plough, from the point of the beam to the tip of the handles, in one entire mass by welding.

I trust my friend Rothwell will take these remarks in good part, and in the spirit they were meant.—*J. Wilkie, Uddingston, near Glasgow, May 1st.*

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FEEDING OF ANIMALS.

THE state of moisture or dryness in which food is administered is of great consequence as regards nutrition. Some of its properties may be completely evaporated, and the nutritive value in consequence diminished. Analysis cannot foretel these accidental circumstances, and in consequence the equivalents may be overrated. Graziers have long been of opinion that green food is the most nutritious. And this is apparently reduced to certainty, by the experiments of those able observers, Messrs. Perrault de Iotemps, who have ascertained that in the feeding of rams, four parts of green lucerne a
equal to one and a half when dry. They ha
obtained from a number of experiments t
following mean results :—

	Brought from the field as hay.	Thoroughly dried.	Aft fr tat in st
100 parts of Lucern, or Clover, when first flowering are reduced to	27,90	25,66	2
100 parts of Clover more advanced in flower, and beginning to shed its lower leaves.	35,27	32,44	2
100 parts of Clover still more advanced..................	41,95	38,59	3

Both lucerne and clover in drying lose a l
portion of leaves and flowers, which is the m
vexatious as they are the most nutritious p
of the plant. Making allowance, then, for
loss in the field, for fermentation, and for
detachment of the more brittle portions in co
ing and trussing, M. Perrault de Iotemps ad
that 100 parts of green lucerne or clover
23 of hay; 4 parts, then, of green lucerne=
of dry, after making the above-mentioned
lowances; and since 1½ of lucerne hay
required to be substituted for 4 of green luce
it follows that in giving 1½ of dried and ferm
ted hay, we are really giving after the ra
6,52 of green food. These data are of g
importance, as they show the great advan
arising from feeding off the crop when gr
an advantage, indeed, of which the prac
farmer is well aware. Besides, the expen
haymaking is saved, and the risk of bad wea
prevented. But because 100 parts of g
clover or lucerne are equivalent to 23 w
dry, it does not follow that the respective n
tive value is in the same ratio. Messrs. P
rault de Iotemps find that the ratio is 8
Assuming the produce of 100 parts of the g
herb to give 32,5 of hay, a result obtained f
drying it when in flower, the ratio becomes 8:
which is very near the above-mentioned re
The importance of the question respecting g
food induces me to copy the excellent obse
tions of Messrs. Perrault, the mean resul
experiments made at Bechelbronn, on the
ing of clover. The clovers of 1841 yi
enormous crops; the plant of the second
attained the height of almost 40 inches

have seen that green clover may be consi- red as consisting of—

Dry Clover........	29,85
Water	70,15
	100,00

the extremes, we have—

	maxim.	minim.
Dry clover	35,7	24,0
	64 3	76,0
	100,0	100,0

alysis gives as the nutritive equivalent of ver hay, 75. Taking 76 as the moisture sipated by drying, it becomes 312 for the me food when green, meadow hay being resented by 100. Practice is not, however, e accordant with theory. Clover hay is posed generally to have nearly the same ritive value with meadow hay, and its equi- ent when green is stated as between 425 and . What takes place in our stables tends also make one think that the equivalent of clover verrated. I find from four experiments that cows consumed 2506 lbs. of green clover, t is about 147,3 lbs. a day each. The usual wance of one cow is 33,09 of good hay. e equivalent of geen clover then must be 445. t this allowance of green food fattens the mal far more more than the stated equiva- t of hay. In accordance with theory each ld have the equivalent of 47,4 lbs. of hay in ,3 of green clover. If, however, we reflect they have green food almost at discretion, shall easily understand that they are in y taking more than their usual allowance od. New experiments, then, are necessary etermine whether green food is really more itious than when converted into hay. I ld not be surprised should accurate experi- t prove that dry food, properly administered, previously moistened, is really the more itious. Very watery food has often a pur- e tendency, which must retard nutrition; other hand, when animals are fed on dry , greater pains are requisite than are usually wed as regards watering. The need of ent moisture for facilitating digestion the practice of steeping the hay in , and shows why it is so beneficial to com- moist food, *as roots and tubers, with hay.*— *ngault, vol. ii.*

AGRICULTURAL INCONSISTENCIES.

Prejudice and error generally go hand in hand, a man may be allowed to indulge in obstinacy for his own gratification, but when society is affected by it, the sooner a new light breaks in upon him, the better. Ask nineteen farmers out of twenty, who hold strong clay land, and they will tell you, it is of no use, placing deep four feet drains in such soils, the water can't get in,—a horse's foot hole (without an opening under it) will hold water like a basin and so on. Well five minutes after, you tell the same farmers you propose digging a cellar, well bricked, six or eight feet deep. What is their remark? Oh! it's of no use your making an under ground cellar, in our soil, you *can't keep the water* OUT!!!!!! Was there ever such an illustration of prejudice as this? What is a drain pipe but a small cellar full of air. Then again, common sense tells us, you can't keep a light fluid under a heavy one. You might as well try to keep a cork under water, as to keep air under water. Oh! but then our soil is'nt porous. If not, how can it hold water so readily? I am led to these observations by a strong controversy I am having with some Essex folks who protest that I am mad or foolish for placing one inch pipes at four feet depth in strong clays. It is in vain I refer to the numerous proofs brought forward last Wednesday by Mr. Parkes, Engineer to the Royal Agricultural Society and confirmed by Mr. Pusey. Our Essex friends still dispute it. It is in vain I tell them *I cannot keep rain water out* of socketed earth in a pipe twelve feet deep, that conveys a spring to my farm yard. Do, Sir, try and convince this large class of doubters; for it is of *national* importance. Four feet of good porous clay would afford a far better meal to some strong bean or other tap roots, than the usual six inches. And a saving of £4 to £5 per acre in drainage is no trifle. Another glaring inconsistency is the subject of tillage. I proposed subsoiling my heavy land for beans, so as to admit the action of frost and air abundantly. A demurrer was instantly raised by a farmer present. Oh! we always plough shallow for beans, well, I know you do. Do you ever double spit your gardens? Oh! certainly we do. Do you ever grow beans in your garden? To be sure, capital ones. What and that on double dug ground!! Impossible, surely. It would puzzle a conjurer to tell why a farmer always digs his garden twenty inches, and ploughs his land only five inches. Docks, thistles, couch, and other strong deep rooted weeds, are *not* to be found in *his garden*. What reason can a farmer give for drilling his beans at seven inches in his field, and *twenty* seven in his garden. Does the *former* mode give him a *larger* or *earlier* produce? Again, a farmer will caution you against sitting in a draught, or lying on a damp bed, of course, he takes care not to do so himself, but whilst he practises this for himself and recommends it to his friends, he pursues an entire different plan with his cattle. They *must* be exposed to both; as if their sensations and physiology differed in that respect, from our own. Let us keep our cattle warm, dry, and well-fed, and we shall seldom feel the *cramp* in our pockets.

I could enlarge on these matters, but will not trespass further on your valuable space at present. If I am wrong in my views and proceedings, I shall be happy to stand corrected.—*I. J. Mechi, 4, Leadenhall street, May 2.*

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ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Deep Draining.—At a recent weekly council, Mr. **Pusey** laid before the Council the following communication addressed by the Right Hon. Charles Arbuthnot to Mr. Parkes, the consulting engineer to the Society.

"You desired to be informed of the particulars of the experiment I communicated to you of laying land dry by drains 4 feet deep. I was induced to make the experiment from reading an article written by you, and which was published in the 'Journal of the Royal Agricultural Society of England,' vol. v. p. 119. Two paddocks of old grass land, containing together seven acres, the soil being a very strong clay, and which had been attempted to be drained, but without effect, by shallow drains, appeared to be well calculated for the experiment. I sent directions to my bailiff first to pare the
the two paddocks, preparatory to bur
and this being done, to sink drains
furrow four feet deep, and to lay pipe
bottom of each drain. The shallow d
been drawn diagonally across the land
deep drains were laid down each fur
distance between the furrows varying
to 25 feet. At the time that the wo
progress (commenced since January la
was scarcely even a single drop of
when it was completed (about six w
there were some very heavy showers, a
not long before the effect of the 4 f
was ascertained. I ought here to me
the pipes in the furrows were 1½ inch,
in the main drains were 3 inches in
My bailiff wrote to me, I being in Lon
after the rain the water rushed rapi
the new main drains, but that none c
the old shallow drains into their ma
The paddocks soon became perfectly d
as I have already said, was far indeed f
the case with the shallow drains. I a
convinced of the efficacy of deep drai
although the whole of the land I o
been drained, partly with stones and p
tiles, and, as was thought, to a tolerab
I intend to cross the old drains with de
in order to do all in my power to fre
from excess of water. The main drains
made, ceased to run as soon as the lan
quite dry, which shows that it was
wet by springs. Instead of using pi
inch diameter, I should have prefer
for the furrows to have been only 1 in
now convinced that inch pipes wo
answered every desired purpose, but i
were not, I believe, to be procured in n
bourhood. Although I was from ho
the experiment was made, I can answ
correctness of my bailiff's account,
always most accurate in what he states,
moreover, he was—till the trial had be
and had succeeded—rather startled at t
of draining at the depth of 4 feet. The
were, as I told you, old grass, origina
appears, under the plough; and hi

ch barbarous times that the ridges were not ly very high, but also very unequal in width, me being 45 feet, and others only 26 feet oad, which I mention to account for the regular distances asunder at which my bailiff as obliged to place the deep drains.—*Charles rbuthnot, Apsley House, April* 21, 1845."

Mr. Smith, of Deanston, took that opportunity submitting to the inspection of the Council ecimens of his new pipe-tiles, with dentated ncture, for the purpose of preventing their splacement in the drains.

St. John's-day Rye.—Mr. Pusey laid be-re the Council specimens of the St. John's-day ye, with an account of his cultivation of it.

Bones and Sulphuric Acid.—Mr. Ken-e favoured the Council with the following mmunication:—

"I perceive the trials which were made last ar with bones and sulphuric acid, are creating ore and more interest as the turnip season proaches; I have great pleasure, therefore, forwarding you, and shall feel obliged by ur laying before the council, an experiment made upon an acre of fen-land for coleseed. put two bushels of bone dust, not ground very e, into a tub, with 70lbs. of acid, and added 0lbs. of water; it was all well stirred together, mained in the tub 24 hours, and then mixed th cinder-ashes in sufficient quantity to make drill. I tried it by the side of bones at the e of eight bushels to the acre, mixed also th ashes; the superiority of the former was ost striking, more particularly during the first o months. I may add, I left a few drills thout any manure, which of course were roughout the season conspicuously bad. In st there was little saving, but perhaps I ought t to have given 2d. a pound for the acid. I s so well pleased with the result of last year's al, I am quite disposed to use them again; is particularly of a cheap rate. I should not ve troubled you with this communication, but t having seen an experiment upon the same scription of land upon which bones are applied th greater success, I think, than almost any er, I thought perhaps it might be found eptable. *I shall be happy to answer any* questions, or give any other information in my power upon the subject, should it be required.—*C. J. Kendle, Fordham, Downham Market, May 3rd*, 1845."

Mr. Pusey also favoured the council with the following excellent practical mode of mixing the materials, which had been communicated to him from Lincolnshire:—

"In the event of the liquid form of application not being attainable, or in case of the compact form being preferred, the following is a very easy way of making a compost applicable by the common drill:—Make a conical heap (similar to that which is made by bricklayers in making mortar) of ashes or finely riddled light soil, using as much as can be conveniently drilled over 3 acres. Make a hole in the centre, in the form of an inverted cone, into which place three quarters of ground bones, the more finely ground the better. Give the whole heap its original conical shape, and make a hole in the centre as before, into which pour 180lbs. of sulphuric acid (the average quantity contained in a carboy) and 9 gallons of water. Keep constantly adding bones and ashes from the sides of the hole, until the whole of the liquid is mixed with the bones and ashes, and turn the whole over once or twice to secure an intimate mixture. Let the heap stand for twelve or fourteen days, after which it may be turned occasionally until required for use.—*W. E., Caistor, March 4th*, 1845."

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HIGHLAND AND AGRICULTURAL SOCIETY.

The last monthly meeting of this society, for the present session, was held in their Museum, George IV. Bridge, on Wednesday the 7th ult., James Maitland Hog, Esq., of Newliston, in the chair.

The papers read were of less than usual interest, nor was there any discussion of importance. The first papers submitted to the meeting were, however, amongst the most interesting, and were read by W. Scot, Esq., of Craigmuie, which related to the merits of spade, as contrasted with plough husbandry, in certain circumstances; one of them by Mr. Ainslie, Elvingston, East Lothian, the other by Mr. Scott, Kirkham, Lancashire. Mr. Ainslie states, in reply to questions which had been put to him by Mr. Milne, that the first piece of land on which he tried trenching, consisted of about 4½ Scotch acres, the soil being for the most part a rather soft loam on a hard bottom, a portion of it rather wet. The soil was trenched to the depth of eighteen inches, and care was taken that no subsoil, properly so called, should be turned up. The cost of the operation was £5 per acre. The result was not satisfactory. The second trial was made on two Scotch acres, forming part of a field of twenty acres, consisting of fine deep soil, rather dry, and on a somewhat hard bottom, the land lying in stubble after a crop of oats succeeding two years' pasture. The work was executed in June, at an expense of about £7 per acre, the soil being turned up to the depth of 20 inches. The stones thrown up were then taken off, the ground harrowed, and manured at the rate of 22 carts per acre. The rest of the field was ploughed five times, harrowed down after every ploughing, and manured in the same manner as the trenched portion. At the end of September the whole field was sown with Hunter's wheat, at the rate of 10 pecks per acre. The trenched portion showed an unhealthy braird, and, when ripe, the crop was thinner on the ground, but the straw harder and taller than in the rest of the field; the grain also was coarser in quality. The whole produce amounted to 288 bolls, the trenched part yielding 24¾ bolls, the rest 263¼ bolls. In 1835 and 1836 the field was in pasture grass, when the trenched portion was very inferior; so also in 1837, when the latter fell short of the rest of the field, in yielding oats, by six bushels per acre. When tried with potatoes, the produce was found to be equal with that of the ploughed land adjoining. Subsequently no difference in favour of the trenched portion of the field has been observable. Mr. Ainslie's experiments have not, therefore, impressed him with the advantages of trenching, *at all events* to such a depth as to bring to the *surface* any of the inferior soils.

Mr. Scott's object in trenching was to supersede the necessity of summer fallowing clay l
for he states his conviction to be, that su
fallowing is only beneficial in clearing the
and preparing it for the seed. He doe
believe that the land derives any benefit
the year's rest; nay, the land seems to r
more injury than benefit from exposure
summer's sun. He therefore conceive
the best plan was to trench the land imme
on the crop being removed, and thus acco
all that was gained by summer fallowing.
author's experiments in trenching were s
ful on clayey lands, but not on lighter
lands, though naturally much more va
In one respect he completely failed e
the former description of soil, inasmu
was found that burying the weeds at the
of the trench by no means killed them,
land was not left in the same conditio
respect to cleanness as it would have be
a summer fallowing. The author is of
that on clay lands that have been thor
drained, trenching would be a very e
and economical preparation for a green
the commencement of the rotation.
be asked if trench ploughing would no
the same effect, and at a much cheape
Trenching with the spade is certainly
the most perfect operation of the two: i
that trench ploughing might at all appro
to it, it would require to be done twice,
cut the first furrow across, which would
increase the expense, and, in winter, po
land to a prejudicial extent. The exp
trench ploughing is generally greatly
rated. But the greatest advantage, i
Scott's opinion, of preparing the gree
land with the spade, would arise from th
ticability of working a farm with half th
ber of horses otherwise necessary. U
whole, he is led to the conclusion, from h
experience in trenching clay lands, th
the most efficient and economical prac
cultivating green crops upon them, as
stitute for plain summer fallow.

Several varieties of pipe drain-tiles wer
described, and specimens exhibited. Th
variety, suggested by Adam Bolland B

ask, was explained by Mr. Slight. It forms conical tube, having a longitudinal slit on one de.* These tubes fit into each other, thus ndering the whole length of the drain, as it re, one continuous pipe from end to end. The ter enters by the joints and the lateral open- g. The inventor recommends (although this not absolutely necessary) that these pipes ould be laid among gravel or small stones, pecially in mossy or boggy land, situations ere he thinks they will be of vast import- ce. They can be made from about 27s. to s. per thousand, the expense being diminished compared with many other kinds of draining s, by the necessity for soles being complete- superseded. Edmund Jones, Esq., then ex- ined two machines of his invention, the one forming couplings to draining pipes, the er for moulding soles. By means of the mer, pipes (which may be made by any ma- es now in use) are severed into four parts couplings, each coupling being pierced with ht or more holes. The pipes being partially red, may be burnt in the whole length as le, or separated before being taken to the n. Mr. Jones stated that a boy might be tructed in a few minutes in the use of this hine, so as to enable him to form and per- te 10,000 couplings per day. The is effected ly by placing the pipe on a porter (or e), and pressing the two ends through the s, and then reversing the porter and pres- g as before, by which means the pipe is ught into contact with the perforators and -cutters. The perforated couplings unite pipes, so as to form one continued chain of ection throughout the drains, thus effectu- preventing any accidental derangement. sole machine consists of a box or trough, which the clay is moulded as in forming a on brick; a frame, fitted with a series of , which work transversely, is then drawn from one end to the other, and the mass divided into eight soles. The inventor estimates that a single workman may easily mould, by this machine, from 12,000 to 20,000 soles per day. They may be dried on hacks, in the same way practised with bricks. A third variety of pipe drain-tile, proposed by James Smith, Esq., late of Deanston, and W. G. Jolly, Esq., Catter, Dumbartonshire, was briefly described by Mr. Slight.

A working model of a new application to the pugmill, for the purpose of producing tiles, pipes, and bricks, the invention of Mr. Campbell Islay, was exhibited by Mr. Carrick. The meeting was much gratified at witnessing the accuracy and expedition with which this machine performed its work, producing at the same moment beautifully moulded pipes and drain tiles.

CATTLE INSURANCE.

It is somewhat surprising that among the various projects set on foot for the relief of agriculture in this country, that of applying the principle of insurance to cattle, has never till lately been brought under consideration. On the Continent, however, they have been more prudent than ourselves, and farmers have long reaped the benefit of that provident forethought which first introduced the system of cattle insurance among them. In France, Belgium, Holland, Germany, Prussia, and, we believe, in some other countries, companies for this purpose have existed for a long course of years, and have been considered of sufficient national importance to induce the various governments to take them under protection. The advantages to farmers have been incalculable, and such societies now assume a more prominent status among foreign national establishments than those for fire or life.

In England, all our movements hitherto in this direction have been confined to the formation of small local clubs, in various districts, for the mutual protection of farmers and cottagers against death among their cows, from disease and accident, but the principle has never till now been attempted to be carried out on a scale commensurate with its capabilities, or the wants of the agricultural portion of this country.

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* We very much object to this slit, for unless the st care be taken in laying the pipes, they may be laced as to admit a quantity of silt, sufficient in a short time to interfere prejudicially with the free ge of the water. Nothing will, in our opinion, come up to the old tile and sole plan of draining, it be the custom *introduced by Mr. Etheridge, of ting the pipe, and placing a cover upon it, and we noticed in our 2nd vol.—Ed. F. H.*

It is with pleasure, however, that we now call the earnest attention of our readers to the advertisement of the "Agriculturist Cattle Insurance Company," in another portion of our paper, which certainly augurs well for its future eminence, if we may form a judgment from the practical tenor of the prospectus, and the highly respectable names which appear as patrons and provisional committee. The rules and regulations seem fair and equitable, and the fact of its being a PROPRIETARY COMPANY, supported by men of influence and a large capital, is alone, we think, sufficient to establish confidence in its operations. Such a company is especially needed in these times of epizootic and other virulent diseases, when so many honest and praiseworthy farmers are suffering losses among their cattle, which they can so ill afford, and we trust it will meet with that support among farmers and agriculturists throughout the country, which we believe it so well merits. We are much gratified to perceive the names of the secretaries of the Royal Agricultural Societies of England and Ireland on the provisional committee, and so many other gentlemen of influence giving the company their countenance and support.

THE COLLEGE OF CHEMISTRY.

(Continued from page 73.)

IN pursuance of the promise we made in our last number, to continue our extract from the pamphlet put forth by the society formed for promoting the erection of a College of Chemistry, we present our readers with the conclusion of their appeal, *which* we sincerely trust will not be made *in vain*:—

In answer to the second question—upon *what* ground is the Agriculturist called upon to promote the science of chemistry?—it observed,

1. That, from the time that Sir Hu Davy published his great work on Agri Chemistry in the year 1813, until 184 Professor Liebig presented his report British Association for the Advance Science, nothing was done for this in department of practical science.

2. That, at the present moment, the agricultural questions to be dec chemical research are most important, a chemist can be found in this cour sufficient leisure to occupy himself investigation.

Let it be considered how essential it instance, that published analyses of the plants should be absolutely faultless, an be greatly multiplied. In the ash given above, it appears that Dr. Will di a substance which before was not k exist in plants, and the presence or a which in the land, although of great im could not be known. It is necessar have analyses made of grain grown variety of soil, and under every possibl tion of locality. Are the constituents Dr. Will all absolutely indispensable; nature, under certain circumstances, s others for them? Can the rare and food of plants,—potass, for instance placed by soda, or lime? What is the the partial or total absence of any on matters from the soil?

Again: what is the exact compo barley, oats, turnips, beet, clover, the as to their inorganic matters?

We need chemists to investigate the

It is only from a very wide range of gation that the true scientific princ agricultural chemistry can be deduce principles, as they become established, to lead to the most important practical ment of the art.

Chemists must be qualified for this and, to qualify chemists, would be national benefit.

With the exception of a few

ose positions as teachers, &c. preclude the ssibility of the needed information coming m them, there are no English chemists to dertake these inquiries. Can the English d-owner trust to the casual aid of foreign ence, the aim of which can seldom be precisely the point most required to be explained? e think it highly injudicious to do so. If any nefit is to be derived from the more accurate owledge of the conditions necessary to the st successful cultivation of the land, promised science—and the ability of science to supply t knowledge cannot be doubted—why should postpone it to another generation—why not, once, make efforts, commensurate with the portance of the subject, to attain it?

The agriculturist is often reproached, and, haps, with some justice, for being far less dy to avail himself of improvements and coveries than the manufacturer. But we st a new era is beginning, and that the farmer l be as willing to use the lights of science, as y man, when they are offered him in a shape on which he can safely depend; and he may well excused that he has not been hitherto t to follow every false light held out to delude l lead him astray.

The Agricultural Society of Scotland, perving the importance of chemistry to the mer, employs a Professor of Chemistry, aided several assistants, to examine soils, manures, c., with the secondary object of pursuing cerin scientific inquiries.

It appears to the "Council of the College of hemistry," that the latter ought to be the *ief* and *primary* object of this institution. rom discoveries purely scientific, all practical vantages must flow. The field of inquiry is wide, and the subjects to be investigated so umerous, that no individual, however active talented—no single society, however suprted, can possibly adequately supply the ded information. It is only by qualifying hly, many, *very many* chemists, who, finding upation in all parts of the country, will be petent to analyze, to investigate, and to son upon the objects of *their researches, that nce can be advanced. Persons so qualified* will find abundant opportunities of employing their talents. The Physician and Physiologist wish to have the very same questions resolved respecting food, which would enlighten the farmer. Manufactories, small and large, require the assistance of chemists to improve their processes, to economize their waste matters. The preparation and sale of drugs and medicines equally requires chemists; and, in short, to increase their numbers, and to furnish the means for their highest qualification, is, at the present moment, the great desideratum of this country, and for the interest of all classes: but especially and primarily of the agriculturist.

A part of the design of the College of Chemistry, and one which the Council trust they shall be supplied with funds to carry out, is to devote a department to the analysis of soils, &c.; so that, for example, a chemical knowledge of the soil on the surface, and of the strata immediately beneath it, may be obtained, corresponding to the geological map of the country. Such a chemico-geographical survey of Great Britain would be of the highest value to science, and immediately applicable to practical purposes; but such a survey can only be accomplished by the concerted and continuous efforts of a well-supported institution.

In conclusion, the Council of the College of Chemistry would impress upon the agriculturist the distinction between the *diffusion* of scientific knowledge and an attempt to extend and increase it. Many efforts are now being made by other institutions to spread such information as we already possess amongst all classes. But the design of this College is to obtain *more knowledge*—to extend the boundary, and to perfect, if possible, the science itself.

To investigate nature—to learn more of the true nature of soils, manures, plants and animals—to ascertain very exactly how plants and animals are nourished, what elements injure and what matters serve to increase their growth—to discover the causes of disease in man, in animals, and in plants, and their remedies,—these are the objects which, in its own further development, chemistry proposes to accomplish. And to promote this science, for its own sake as well as for the innumerable benefits likely to arise from it in practical matters, especially to agriculturists, the co-operation and assistance of every one interested in the welfare of the country is confidently hoped for.

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AMERICAN FARMING.

We cannot expect that scientific farming has yet made its way very far into the back woods of América. Instances are however by no means rare of good and careful practical husbandry amongst the farmers of the United States. The following letter may be read with advantage by many of our slovenly yeomen who think, that any place is good enough for the dung heap, and that rough uncleansed ditches and uncropped hedges, together occupying four yards wide of land, are the cause of no loss to them—taking nothing from their acreable extent under crop ; although they must see, if they look the fact fairly in the face, that for those unnecessary hedges and ditches they are paying after the same rate per acre as for the most fertile portions of the fields they divide. These remarks have been called forth by the following, which we copy from the *Albany Cultivator*, for April last: and although we do not by any means recommend to our brother farmers the attempt to grow Indian corn, squashes, or pumpkins, yet we think there are many hints which they may very advantageously take. The letter is addressed to the editor, and proceeds—

I am doing a little in the way of farming, my time being occupied almost entirely in my professional duties. I cultivate 25 acres of land, keep two horses and 4 cows; raise all my beef and pork, with plenty of poultry and eggs ; keep the variety of fowls called the Italian or perpetual layers; they certainly exceed any thing I ever had for eggs. If I was furnished with a cellar, which in my location cannot be had, I believe they would lay as well in winter as summer. I feed with all kinds of grain, with animal food and lime. The past year I raised 500 bushels ears of corn, with a sufficient supply of broom corn for family use—70 bu. oats—40 bu. wheat—150 bu. potatoes—75 bu. sugar beet and turnips—5 bu. winter beans—4 bu. clover seed—plenty of provender for my stock, and 3 or 4 tons of hay for sale; pumpkins, squashes, &c., in abundance. My practice is to have a good supply of milk and butter all the year, winter and summer, by the use of the sugar beet in winter; an abundant supply of apples of the best quality; a large garden and vegetable patch, supplying abundance of grapes, strawberries, raspberries, currants, and garden vegetables, with cherries, quinces, peaches, &c.

I find it quite important to attend carefully to the manufacturing of manure. The best manner I have found is to keep my yards and pens well supplied with muck, scrapings of ditches, sods and the like, to catch and retain all the leach and urine.

Much has been said on the manufacture of poudrette. My practice is to have a good sink under my privy, with a heap of muck or something of the kind laying near; into this sink I cause to be cast all the soap suds, &c., from the house, and occasionally throw in some of the dirt. Once a year clean it out with no inconvenience whatever. In this way I have 8 or ten cart loads of the best material for top dressing for any crop. My coarse manure from the horse stable, I throw into the pig pen, thus increasing its value nearly one-half. I stable my cows carefully during the winter.

You will perceive my doing is in a small way; but I go on the principle of doing well what I undertake. I have always practised deep ploughing, with decided benefit. Many years before I saw an agricultural paper, I employed one of my neighbours to plough the first acre I ever owned, and miserably poor it was. I urged him to put in the plough. Said he, "you will ruin your land." My answer was, it is [illegible] good for nothing on the top—if it is any better below, I will have it up. The consequence is, that now, with the little care I have taken, I have a lot with deep soil, that will grow any crop I put on it. I have done much at blind ditches filled with stones, thus reclaiming many spots that were before useless. [illegible] soil plough, but have a high opinion end to try it this season if I can. ıard retentive clay subsoil, which ›uld be much benefited by being

C. Osborne, Westfield, Essex co.

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VORTH FARMERS' CLUB.

eeting of this club, The subject was e and Properties of different Ma- adaptation to particular crops, and ne for applying them," and having fullest consideration of the members ' were unanimously of opinion that, the various manures, none can be ended upon as well-prepared farm- 'e, both as respects certainty in he produce on an average of crops, :ore of economy as regards expense. ›inion, which has been held by the al agriculturists in all ages, is fully n this district by the individual ex- the members present. That the of the British farmer is to husband sources, and to that end his best ›uld be devoted to the due prepara- -yard manures, so as to produce the ' and the greatest quantity. That e members are fully sensible of the of many artificial manures, yet they at such ought not to be depended incipals, but only to be used as whenever a deficiency of farm-yard ıts, or local circumstances point out y of their employment.

Reviews, &c.

' *Letters on Agricultural Improve-* 3y John Joseph Mechi. London, ı and Co.

the farmer candid enough to ıat he has not heard of Mr. Where is the man who before expended the same amount of : acre in the improvement of the . the calculation that it would munerative outlay?

e had various *improvers in past lividual men who have doubled* the annual value of their estates by a proper outlay of money, and companies which, having succeeded in reclaiming waste lands, are now the owners of some of the finest farms in Britain; but in no case, either of individual enterprise or the application of accumulated capital by companies, which has come to our knowledge, has the outlay been anything like that of the writer of the letters before us. He has, in fact, purchased his estate on Tiptree Heath as it now stands at something more than £70 per acre, and *it is our firm belief that it will pay him* a fair interest for his money, if the draining—the most important of his improvements, has been well executed.

It certainly startled the agricultural world when they were first told that on an estate of 130 acres, which cost but £3250, Mr. M. had laid out £6200; and we well remember the many notes of admiration placed by a cotemporary in one of the agricultural papers of the United States of North America, after the announcement of the fact of Mr. Mechi's outlay, which had been copied from our columns: no doubt our respectable brother Jonathan was well inclined to believe we were "going the whole hog" in making the statement, which we did, however, upon the faith of the letters before us, most of which were noticed in our columns when published by their author in a separate form.

That Mr. Mechi is a man of keen discernment no one who has read even the shortest of his agricultural letters can fail to have discovered; and although he being hitherto a theorist in farming, may have allowed his love of science to have carried him now and then rather too far, yet this will not, in the least degree, rob him of that confidence to which, even amongst practical farmers, he is so well entitled.

The book before us is well got up, and should be found upon the table of every man in any respect connected with the soil. It is of that desultory character which defies criticism, containing abundance of sound maxims, suggestive reflections, and important extracts from other works, and from the reports of farmer's clubs in all parts of the kingdom, that it were vain to follow in anything like a connected account of the work, which has at this moment its deep value, in our estimation, as shewing how far capital may be advanced in the improvement of the soil. Mr. M. himself has set an example which he is most eager that others should follow: he is anxious not only that individuals may, by his example, be stimulated to improvement, but that the abundant capital of the country should be divested from its present, in many cases, profitless channels, in the formation of railways of doubtful pretensions, to the effectual improvement of the soil.

This is not by any means a new mode of employing capital accumulated for the purpose in shares; it is one of the most certain, safe, and praiseworthy, which can engage the attention of the capitalist. To Mr. M.'s opinions on this subject we drew attention in our 2nd vol. pages 103 and 123.

And with a directory composed of such men as our author, and a few practical landowners, *the investment would be safer than any other in the world.*

At page 19 Mr. Mechi recurs to the subject in the following:—

Now all this might be easily obviated and prevented by a well conducted company, having practical directors, with proper engineers and officers (such men as the eminent Mr. Parkes for instance.) Do away with the law of mortmain as regards such companies. Let them purchase waste or poor lands—drain, char, trench, crop, and let them. Let there be rival companies and their shares quoted at the Stock Exchange, the same as railway companies. Their success would depend upon their abilities and results, and a man disposed to invest his money in agricultural improvement could, without any personal trouble, buy or sell his shares or bequeath them without more anxiety or care than attends any other investment.

The importance of such companies is too obvious to need comment; all other undertakings, however useful or great, I consider secondary and subservient to the production of our daily bread and the provision for our daily labour. Let our city capitalists and our great practical agriculturalists combine—let one find money and the other judgment: let them consider their interests inseparable (as they really are.) How delightful will it be to see in our daily papers lists of Land Improvement Companies for every county in England, Ireland, Scotland, and Wales, quoted on the Stock Exchange! How pleasant to watch and compare the management and success of a hundred such companies, to read of their meetings of shareholders, and of their prospects; to see those, whose directors possess most talent, energy, and discretion, publishing their annual reports, and stimulating or shaming the sluggard agriculturist. How much more grateful to see Mr. Cobden and Mr. Baker on the same committ exercising their great abilities to stimulate th productive powers of our grateful, but neglect soil—throwing to the winds the question foreign importation or protection! How pleasant to see in our shipping lists, that havi abundance of corn, we are *exporters* of flax, and other matters, which we are now obliged purchase! Could we but produce food with much skill as we do manufactures, we sho indeed, be a great nation—we have the to do so had we but the *method.* Had companies existed years ago, millions of money lent or wasted to strengthen other nati would have been employed *at home* in add to our happiness and welfare. My earnest is, that I may be spared to see my suggest in practical operation—it will be amongst happiest moments of my life! Our duty our country and to ourselves claims our attention to this matter.

With reference to which we may obser that we do not see the necessity for a separate company for each county: that the should be many such companies in kingdom we admit, it would be better all parties that it should be so; but som counties are so small as compared wi thers, and have comparatively so little eed of extra aid, that we repeat we do not ee the necessity for them in every county. n concluding our present notice of Mr. Mechi's work we again press upon our eaders the desirableness of having it at and for reference, for there is scarcely subject in relation to agriculture upon hich he will not have brought his acute ind to bear.

COLTSFOOT AND OTHER WEEDS.

T the monthly meeting of the Darlington armers' Club, held on the 9th ult., at the ffices of Mr. Dixon, Land Agent, the subject under discussion was "*The best method destroying Coltsfoot and other deep-rooted eeds.*" In the absence of the chairman, e vice-chairman presided, and on introducing the subject observed, that Coltsfoot, e believed, was a weed which was very ifficult to eradicate, for however well certain descriptions of land might be cultivated nd cleaned, yet, if addicted to the growth f this weed, it would frequently make its ppearance in the crops, in spite of everything that could be done; and, therefore, if ny member present could throw any new ight upon the subject, which would assist n its eradication, he would certainly render a very desirable service to the meeting. fter an animated conversation of a considerable length, the meeting was of opinion hat Coltsfoot being a perennial, and very eep-rooted weed, and one which the embers believe is propagated, both by eed and by the division of the roots, very nall portions of which, when separated, ill grow,—it was unanimously resolved at the most effectual mode known of eping down Coltsfoot, and other deep-rooted weeds was, to plough deep, and cultivate the land thoroughly and well, taking re to gather off every particle of the roots ich can be found; and in growing crops, wherever Coltsfoot makes its appearance the land, always to take care to hoe it , or *cut off the flower, to prevent it* from *eding.*

ROTATION OF CROPS.

We are indebted to the *Cultivator*, an American paper, for the following letter, the first of a series upon this most interesting and important subject. Mr. Girdwood, the writer, is evidently well qualified for the task he has undertaken, and we shall have pleasure in making our readers further acquainted with him. To every farmer in Britain or Ireland the excellence of the culture in the Lothians of Scotland has long been familiar as his household gods, at least, by reputation. The present series of letters from Mr. Girdwood will shew the world how that excellence has been obtained:—

I propose to give you a series of short papers on the agriculture of the Lothians, in the hope that they may prove interesting to your numerous readers.

I am unwilling to suppose that there is nothing in the experience of a district, so long famous for its agriculture, that may not be studied with profit, even by individuals possessed of great skill and knowledge in that most useful of arts; but at the same time I am aware that the most valuable parts of our system, may have already been transplanted, and may even now be flourishing in the United States, with all the luxuriance which a virgin soil imparts.

Trusting to your indulgence, I shall therefore devote this letter to some introductory remarks on the rotation of crops. I am fully aware that the sanguine expectations of some, as to the application of chemistry to agriculture, lead them to believe, that at no distant day, rotation of crops will be numbered with the things that were—that the finger of science will point out to us, not only the substances removed with each crop, but also how we may replace them in an economical manner. I am too ardent an admirer of chemical science to doubt its power to do this, but I cannot believe that it will very materially affect the axiom that a sound and philosophical system of rotation is the basis of all judicious and profitable agriculture; for even were we so far advanced in chemical knowledge, as to be able to grow luxuriant crops of wheat year after year, on the same land, without deteriorating it, it is evident that the supply of this sort of grain would soon exceed the demand. From thus being the most remunerating of crops, owing to the limited extent of land on which it can be grown, it would gradually become less so, while the supply of the other corns which are less remunerating, owing to the fertility with which they can be grown on moist land, would be shortened, and the price of course enhanced; and when that point was reached, at which the profits were equally balanced, the further application of the principle would be arrested. I apprehend therefore, that the legitimate occupation of chemistry is to point out to us how we may avail ourselves of the large amount of inorganic substances laid up for us in our own soils, by supplying those of which they may be in want — to show us how to draw upon nature, so that our drafts may be honoured—how to pay the interest, that we may have the use of the principal, rather than that we are to look upon our fields, as a mere extension of space—the floor of a manufactory, into which we are to bring from without, *all* the raw materials required, for the production of the substance we propose to obtain.

The theory upon which the rotation of crops is based, is, that different plants require different series of the inorganic substances contained in the soil, for their growth and development; but as these substances require the action of tillage and the *seasons* to reduce their particles to that minute state of division, in which they can be absorbed by the spongioles of plants, therefore the less frequently those plants which require the same series of inorganic substances are reared on the same soil, the more copiously will they be supplied with properly prepared food, when they are reared.

The following table from the Transactions of the Agricultural Chemistry Association of Scotland, shows the amount of inorganic substances contained in three different soils, and that a fertile soil contains at least 9 or 10 of these substances.

	Very fertile.	Fer. with manure.	Barren.
Organic matter	97	50	40
Silica (in the sand and clay) ..	648	833	778
Alumina (in the clay)	57	57	91
Lime	59	18	4
Magnesia	8½	8	1
Oxide of iron	61	30	81
Oxide of manganese	1	3	½
Potash	2	a trace.	a trace.
Soda.... Chiefly as com. salt	4	0	0
Chlorine	2	0	0
Sulphuric acid................	2	½	0
Phosphoric acid	4½	1¾	0
Carbonic acid combined with the lime and magnesia..........	40	4¼	0
Loss	14	0	4½
	1000	1000	1000

Now it must be evident to every one, that if we go on for a length of time raising any particular crop which carries off a larger quantity of *any of those* elements than the relative *proportion of it* in the soil, we must by and by reduce *the fertile* soil to the state of the barren one. As an example, we may take potatoes, which contain a large quantity of lime, magnesia, potash, soda, and phosphoric acid. Now it will be seen that these very substances are almost all wanting in the barren soil; we may therefore conclude that if we go on raising potatoes year after year without adding the whole of the substances removed, we will reduce the fertile to the state of the barren soil.

From what has been stated, it must be obvious that a proper course of rotation, is that which removes equal relative quantities of the different substances composing the soil, and which places those plants which feed on the same substances, at as great distances from each other in the rotation as possible. This holds good even in the vicinity of large towns, where, from the facility of obtaining manure, a large portion of, if not all the substances carried off, are returned to the soil; as by adhering to a judicious rotation even in this case you present such a profusion of aliment to the different classes of plants, as to convert *good crops* into *luxuriant ones*. In forming a correct judgment of any course of rotation, we must also take into consideration the facilities it affords for eradicating weeds, and keeping the land in that state of absolute freedom from them, which, while it adds profit, so it ought to be the pride of every agriculturist.

In my next, following up this subject, I shall give you some account of the rotation of crops as practised in the different districts.—*J Girdwood, Featherhall, Mid-Lothian.*

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American Hops.—An extensive fresh importation has just taken place, of very excellent quality. The duty on this produce is so high that the last which were imported were sold for the use of Sydney and the channel islands.

Wire-fly.—A correspondent says, the best mode of destroying the small wire-fly infesting bacon, hams, &c. is as follows:—I know of none more easily obtainable and better than a wash of quick-lime applied hot; spirits of turpentine will speedily kill them, but as it will flavour the meat, and that most disagreeably, the remedy is as bad as the disease. A thorough cleansing and ventilating the apartment, and removing the hams, &c., for one season, will drive them away, or rather prevent the continuation of them; for the parent insects deposit their eggs in the meat that is to hatch them into life, and bring them to a full grown state. They live but one year, consequently are easily remedied.

ON THE GROWTH OF TURNIPS AND BEANS IGETHER.—I grew this winter a Russian an, which is planted in September and ctober; they ripen much sooner, and mit of being sown on lighter soil than e spring bean; they are drilled in rows inches apart, and are carefully horse- ed two or three times in the spring, prior the turnips being sown in May; these e likewise drilled in rows 27 inches apart, the centre of the beans. In this way I ver fail to grow perfect crops of turnips; d a month after the beans are cleared off e turnips cover the ground, and are as ean as the best fallow-grown ones, for the se-hoe, as soon as the beans are off, is sed between the turnips, taking up the an-stubble and all weeds left on the for- er hoeings. I should use the clover seed rrow to sow the turnip seed, arranging it well as I could to drop the seed between e rows. I sow the quickest growing tur- p, (the Stone or the Six-weeks white,) cause I want to feed off for wheat. I do t think Swedes would do, as little pro- ss is made whilst the beans are on the d. The aroma from the bean-bloom, ich is said to contain much carbonic s, appears to keep the fly away, for, less in places where the beans are faulty never see a fly. I assure you I have wn in this way 90 acres of turnips in a son, and without a fault.—*Hewitt Davis.*

LUCERNE.—The soil best suited for it is a ep dry loam. Sow early in April 12lbs. of d per acre, in rows 14 inches wide. The d must be kept clean by hoeing, and kept in d heart by annual top-dressings. You may t it the first year probably in August, and wards the first cutting may be as early as middle of April. Cut always before the om appears. 80 to 100lbs. a day will feed w; and 40 or 50, along with its corn, will fy a horse.

ELECTRO-CULTURE.—In reply to several in- iries, we may say that the cost of a square 6 by 22 yards, being an area of half an acre, uld be—for 6 lib of iron wire at 4d. per lib r burying) 2s.; 4 lib of ditto at 3d. (for pension) 1s.; two poles of dry wood, 1s.; our, &c., 1s.; total, 5s. As the area in- ases, the cost diminishes. Convenient and rable areas are, *for two acres, 120 by 80 rds yards; one acre, 80 by 60½,* three quarters of an acre, 82½ by 44; half an acre, 73 1-3rd by 33; quarter of an acre, 55 by 22; one eighth of an acre, 40 by 15½. The mode in which the plot is laid out, is as follows. With a mariner's compass and measured lengths of common string, lay out the places for the wooden pins, to which the *buried* wire is attached (by passing through a small staple.) Care must be taken to lay the length of the buried wire due north and south by compass, and the breadth due east and west. *This wire must be placed from two to three inches deep* in the soil. The lines of the buried wire are then completed. The *suspended* wire must be attached and in contact with the buried wires at both of its ends. A wooden pin with a staple must therefore be driven in, and the two poles (one 14 feet and the other 15 feet) being placed by the compass due north and south, the wire is placed over them, and fastened to the wooden stake, but touching likewise at this point the buried wire. The suspended wire must not be drawn too tight, otherwise the wind will break it.—*Economist, May* 3.

FOREIGN POTATOES.—A new article of import has been introduced by the Trent steamer, from the West Indies, in new potatoes, which have been successfully cultivated in the Bermudas, for the early suply of the English market, grown from the best seeds. The climate and soil is well suited for the growth, and about a ton has been brought over as a sample by the above steamer. In boiling they are said to be even of superior quality to those of home produce, being less watery. The same vessel has also brought over a quantity of pine apples, preserved in their juice in bottles, which are likely to be a valuable addition to the kitchen.

VALUABLE HORSE.—The draught stallion, "Young Britain," the property of J. Loudoun, farmer, Cessnock Mains, Galston, has had a turn of good fortune which seldom falls to the lot of an animal of the same description. Nearly five years ago, he carried off the fifty pound premium at Ayr; in the year following, a premium of nearly the same value at Dunfermline; and for the three following years he has consecutively won the first premium at Brechin—thus gaining for his owner, of prize-money alone, £200 in little more than four years, a circumstance almost, if not altogether, unprecedented in Scotland.

Bencraft's Saddle and Patent Hames.—Mr. Dean, saddler, of Chester, has obligingly furnished us with ample proof of the great comfort resulting from the use of this patent saddle. We observe Mr. Davis the Queen's huntsman, has added his testimony to that of many others in its favour: indeed we are at a loss to imagine anything more conducive to the ease at once of both horse and rider. The patent hames too appear to us to be based upon a correct principle, viz., that of preserving an equal pressure upon the shoulders of a draught horse, whilst in the collar; and we have no doubt whatever that when brought fully before the public, and fairly into use, no other than the patent saddle and hames will be used.

Within the last few weeks a new disease has been very prevalent in the dairies, in and around the metropolis. It chiefly attacks cattle in the hinder extremities, paralyzing the limbs.

Cattle Epidemic in Ireland.—An Example to Landlords.—On its being made known to Capt. Stackpoole, R.N., who resides at Milford, in Ireland, that *the entire* of the cattle of Michael Finucane (one of his tenants,) of Caerconlish, had died of the prevailing epidemic, with the benevolent spirit of a true British tar he at once ordered his agent to allow half the value to the poor man in his rent.

Electric Clock.—Great attraction has been drawn to a curious specimen of mechanical skill in the possession of Mr. Thompson, of Darlington: an electric clock, which, without weights or springs, is worked by means of electricity, and, without winding up, will go for years.

Useful Knowledge.—The farmers' dames in some parts of Hampshire, in their notable endeavours to turn everything to *good* account, have acquired much fame for pickling eggs, *which,* whilst they constitute a somewhat novel *feature* in the catalogue of condiments generally, are at the same time particularly relishing. When eggs are plentiful, they take from six dozen of such as are newly laid, an them to be boiled hard; then divesting the shells, they place them in large mouthed jars, and pour upon them scalding vineg seasoned with whole pepper, allspice, and a few cloves of garlic. When the cold, the jars are stopped down quite cl the former will be fit for use in the cou month afterwards.

Culture of Peas.—The lines should be a long way apart, say 1 the beds in which the peas grow sh trenched if possible, 3 feet in dep raised at least 1 foot above the level; this gives the earth in whi grow less rain and more sun; t moreover should be richly manur only on the surface spit but also second and even the third spit; th comes a wet season your peas lie h dry, and in case of heat their ro have a healthy range beyond its re

New and rare plants.—*Sal coccinea.*—Collected by Mr. Purdie maica, and by him sent to the Roy dens, Kew, where it blossomed freel stove during the autumn and wi 1844-5, and made a very pretty app with its gracefully pendent scarlet b and its well-formed dark green folia is a low, branching shrub, glabrous i part, with ample, opposite leaves: duncles are axillary and solitary, or nal, and then ternate, drooping; the ones, however, terminate a two-branch, or innovation, while the peduncle springs from the apex of th branch; the upper part of this pe bears rich, red-coloured flowers, ar in a spike, the flowers decussately op bearing some resemblance to those o *nettia cordata.—Bot. Mag.*

Lupinus ramosissimus. Branchi pine. (Bot. Reg. 25.) A native of C borazo. The flowers are blue and having the delightful fragrance of the pea. It is a shrubby species.

ARDENS.—The Bill, as amended by ittee, to promote the letting of field the labouring poor, has been printed. ıow twenty-two clauses in the measure ıly to extend to England and Wales. dment by the Committee is to the if a meeting is not called on a requi- omote the letting of field-gardens in ıe requisitionists may themselves call and proceed to put into force the of the law.

Lucerne Clover.—We have seen ı of very early clover of the above ı, measuring fully two feet in height, tedhalt, on the property of William ıq., who, we understand, has been cut- the use of his horses since the 1st of is is the first clover we have seen for , and we understand what adds to the ıis description of clover is, that it is a plant. The sample of this extraordi- growth can be seen at our office.—*Conservative.*

The Markets.

is still on the advance: 2s. per quar- d to be the present total rise; but from learn, and what we see around us, we d to calculate upon a still higher figure: s may be summed up in a few words; what there is of it, is almost entirely ds of the growers; the trade has been h so much caution that stocks are every t; there is a foreign demand for France an, which has had a serious effect upon export markets of Dantzic, &c.; our on does not fall off, so that between and cannot see our way into any fluctua- rise must be gradual, and should our ove bad, it will be great. Our advices outh describe the Wheats as but indif- e, and not by any means full upon the In this district, however, autumn sown ly looking well: late sown, however, is laces so poor as to have been already under; still we think the general breadth full average.

BEANS, and BARLEY, are all in better demand: the former realise 6d. per quarter more money.

BEEF and MUTTON are up to a higher figure than they have been since the tariff—higher in fact than they ought to be. We want to see them never lower than 5½d. nor higher than 6½d.: every man in the country would then have a reasonable chance of a fair proportion of this necessary diet.

CHEESE will, in our opinion, find a better market; indeed the advancing prices of butcher's meat will lead to it.

LONDON, May 26.		Per	Qr.
WHEAT, Essex and Kent, new, red		46	57
White	46	50	57
White, old		52	56
RYE, old		32	34
New		36	—
BARLEY, Grinding		24	28
Malting		30	32
Chevalier		33	—
Irish		24	26
Bere		25	—
MALT, Suffolk and Norfolk		58	63
Brown		56	60
Kingston and Ware		60	—
Chevalier		65	—
OATS, Yorksh. & Lincolnsh., feed		22	23
Potatoe		24	26
Youghall and Cork black		20	21
Cork, white		21	22
Dublin		21	22
Black		21	22
Scotch feed		22	23
Potatoe		24	25
Limerick		22	23
BEANS, Tick, new		30	36
Old, small		38	40
PEAS, Grey		36	38
Maple		35	38
White		38	40
Boilers		38	40

SEED, Rape, 27*l*. 28*l*. Irish, 22*l*. 26*l*. per last.
Linseed, Baltic..38 44 Odessa..45
Mustard, White......12 15
Brown ....10 12 per bush.

FLOUR, Town-made 42 —
Suffolk.... 32 34 per sk. of 280 lbs.
Stockton and Norfolk 32 34

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		32	36
Hamburgh		30	32
Rostock		30	33
BARLEY		19	23
OATS, Brew		17	18
Feed		14	17
BEANS	—	24	29

Peas	28	32
Flour, American, per barrel	19	—
Baltic	18	—

LONDON AVERAGES.

Wheat	7344 qrs.	£2	7	11
Barley	971	1	8	11
Oats	14344	1	2	0
Beans	55	1	10	10
Peas	1315	1	15	9
Rye	179	1	16	3

SEED MARKET.

	s.		s.
Canary, per qr.	47	to	48
Carraway, per cwt.	44	to	46
Clover, red, English	45	to	50
„ „ Foreign	40	to	48
„ white, English	60	to	62
„ „ Foreign	50	to	62
Coriander	12	to	18
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000	£11	to	£11 5s.
„ „ Foreign, p. ton	£7 7s.	to	£7 10
Mustard, white, per bushel	12	to	14
„ superfine „	—	to	—
„ brown „	8	to	12
Rapeseed, English, per last	£26	to	27
Tares, English, spring p. bushel	6s 6d	to	7 6
Foreign „ „ „	—	to	—

LIVERPOOL, May 27.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ꝑ 70lbs.	7	0	7	6
Ditto, red	6	9	7	0
Irish white, new	6	6	6	10
Egyptian	5	9	6	0
Oats, Eng. mealing, ꝑ 45lbs.	3	3	3	9
Irish	2	11	3	0
Welsh	2	9	2	10
Barley, Eng. malting ꝑ imp. qr.	28	0	80	0
Grinding	0	0	0	0
Irish and Scotch	4	0	4	6
Rye, per imp. qr.	32	0	34	0
Beans, English, per imp. qr.	36	0	40	0
Irish and Scotch	34	0	38	0
Foreign	38	0	40	0
Egyptian, per 480lbs.	34	0	35	0
Peas, English, per imp. qr.	38	0	40	0
Foreign	37	0	38	0
Canadian	35	0	36	0
Malt, per imp. qr., fine	60	0	62	0
Flour, English, per 280lbs.	36	0	39	0
Irish	35	0	36	6
Foreign, duty-paid, per 190lbs., U.S.	27	0	29	0
Canadian	27	0	28	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	24	6	25	0
Irish	23	6	24	9
Indian Corn, per 480lbs.	21	0	24	0

PRICE OF AGRICULTURAL PRODUCE

LIVERPOOL, May 27.

Hay, best	1s	0d	*Potatoes.*	s.	d.
Clover ditto	1	1	Short tops	1	5
Green ditto	0	3¼	Red apple	0	0
Vetches	0	2½	Cups	1	8
Straw.			Cattle	1	6
Wheat	0	6	Turnips pr ton	26	0
Oat	0	6½	Carrots	37	0
Barley	0	7	Mangle	25	0

Cattle Markets.

LONDON, SMITHFIELD.

May 26, 1845. ꝑ st. of 8 lbs.

	s.	d.		s.	d.
Inferior coarse beasts	3	2	to	3	6
Second quality do.	3	8	to	3	10
Prime large Oxen	4	0	to	4	
Prime Scots, &c.	4	4	to	4	
Coarse and inferior Sheep	3	6	to	4	
Second quality do.	4	2	to	4	
Prime coarse woolled do	4	6	to	4	
Prime Southdown do	4	10	to	5	
Large coarse calves	4	2	to	4	
Prime small do	4	10	to	5	
Large Hogs	3	0	to	3	
Neat small Porkers	3	8	to	4	

LIVERPOOL, May 26.

	s.	d.	s.	d.
Beef, per lb.	0	6	0	
Mutton	0	6	0	7
Lamb	0	7	0	7

MANURES.

Subjoined are the prices of several sorts of manure :—

Bone dust, 17s. per qr.

Half-inch Bone, 15s. per qr.

Artificial Guano, £9. per ton. 15s. per cwt.

Guano, 10s. to 12s. per cwt., according quantity.

Rape Dust, £6. to £6. 6s. per ton

Rape Cake, £6. per ton

Gypsum, at the water side, 35s. 0d. per landed and housed, 38s. to 42s. per

Nitrate of Soda, 16s. 0d. (duty pd.) per cwt.

Nitrate Potash (saltpetre) 26s. per cwt.

Preparation for Turnip Fly 10s. 6d. per pack sufficient for three acres.

Muriate of Ammonia, 24s. per cwt.

Muriate of Lime, 6s. per cwt.

Compost, £3. 12s. 6d. per hhd. sufficient three acres.

Alkalies, 28s. and 42s. per cwt.

Sulphuric Acid, 1¼d. per lb.

Sulphur for Destroying Worm on Turnips, per cwt.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

JULY—1845.

NAGE & INCLOSURE BILLS.

e given our attention to these im- propositions of the government. e decided first steps in the right 1, and will, no doubt, ultimately ther measures calculated to effect nt and beneficial changes in the n of the country.

are the first governmental attempts ve obstructions at present in the , thorough cultivation of the soil. rue the machinery of them may be at cumbrous, but against that draw- must not forget to set the powers the first time proposed to be given roving landlords; powers, which ingly admit ought to have some me restrictions. We do not con- e, nor indeed can the most sanguine ers of these measures contemplate, bills before us will be found a panacea for all the evils which an ct drainage, and a sad want of judi- tlay upon moors and common lands pon the country. They are at best efore observed, but first steps in the arch of agricultural improvement; xperience will point out their de- d when the benefits which even they ulated to confer begin to be felt, ulse will be given to improvement he *most do-nothing landowners* will *to see. As it is probable* some alterations may be effected during the progress of the bills through parliament, we have decided upon not laying their provisions before our readers till they shall have become law, when we will furnish a copious abstract of them.

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BONES AND SULPHURIC ACID.

An esteemed correspondent in our last number makes a playful but rather severe attack upon the application of dissolved bones. We have ourselves tried it both last year and this, and although it is rather too soon to form any conclusion as to this year's application, yet we may, with reference to that of last year, assure our correspondent that the wheat plant upon the ground where the dissolved bones were then applied is, and has been, better and more vigorous—about five inches higher hitherto than on the adjoining part of the field, which was manured with farm-yard dung.

The following editorial article, from a talented cotemporary, speaks exactly our sentiments upon this subject, though we do not admit that "reason," in every case, and most certainly not in the one above alluded to, "is shut up within the fortifications of prejudice or vanity." With this *salvo* we say with our cotemporary—

The action of dissolved bones places within our reach the following direct advantages—

saving in the cost, and a gain in the produce of the turnip crop.

The saving of cost arises from 4 bushels of dissolved bones producing a better crop than 16 bushels in their ordinary condition. Fact, as has been shown by the evidence of a host of experimenters, proves this; and theory, as has also been shown, explains it.

It has, however, been assumed that, supposing 4 bushels of bones be required to supply the phosphates for one crop, 16 bushels are necessary for a rotation of four crops; and, consequently, after we have grown our turnips with 4 bushels of dissolved bones, we ought, according to good husbandry, to give each succeeding crop 4 bushels also; and therefore, on the four-course system, we shall, if we adopt the suggestion, gain nothing by dissolving the bones but extra trouble and expense; for 4 bushels per acre, on the whole of our arable land, is just the same in amount as 16 bushels per acre upon one-fourth of it. This argument looks startling; there is no flaw in the reasoning; but, unfortunately for its stability, the premise upon which it is based is erroneous. Four bushels of bones (160lbs.) contain phosphates more than sufficient not only for the crop of turnips, but for a rotation of four crops —66lbs. of bone, according to Liebig, being equal in the amount of its phosphates to the supply of three ordinary crops. To be sure, if our land be poor, it may be supposed that 4 bushels will be a very inadequate manuring for a rotation. And this is true; it is not, however, inadequate so far as concerns the supply of phosphates; and 16 bushels would, therefore, be an equally inadequate manuring, as it would supply little of anything else but phosphates; these it would afford in excess, but they would not enrich a soil deficient in organic matter. On the other hand, if we save 12 bushels of bones, containing that which is not required, this economy will allow us to add those fertilising matters which are needful.— Knowing that vegetable life requires a great *many sorts* of food, it is not economy to apply *more than* is required of one ingredient, and *none of others* equally essential.

Bones, it is true, contain animal which the soil may require; but in o supply this, we have no occasion to p and apply four-fold the phosphates requ Let us apply, in a free state, so mucl earthy constituents as are essential, a we can purchase the other matter, ii forms, more cheaply.

No practical farmer would think o 20s. per quarter for bones, if he thou the 33 per cent. of animal matter ai which they contain was their only usefu dient. Yet he does so when he ap bushels of bones per acre, in addition which alone are required to supply all th phates that are necessary.

Even in the poorest of soils, therefi not an advantage to give all the phos may require in a prepared or soluble st thus save three-fourths of the quantity applied, converting the saving into larger supply of animal and other n matters, than the whole quantity of bon afford? And upon turnip soils, whicl ready rich in organic substances, and w earthy part of bones alone is needed, th which we advocate is a positive money such places 4 bushels of the soluble bo perly applied, will afford all that is requ effect all that the most liberal dressing dinary bones could possibly accomplish

The gain in the amount of produce proper use of soluble bones, is supporte evidence already collated; and it is not to account for. When we give the turn a ready supply of its essential food, its from the commencement, is active: its of nutrition are sooner developed, an powerful in their operation; and its bro through which it inspires the whole, or share of the carbon in its structure, speedily put forth. The growth of the thus facilitated,—it suffers less from the of its insect enemies, and attains an ear more prolific maturity. The advantage the application gives us over the fly, is vious and most important agent in pro this increase of crop.

The amount of crop, however, may often be increased by the facility which the preparation affords of being used in a compost with other matters suitable to the present and anticipated wants of the soil. It may also be mixed with any "slow-working" manure, and thus a fertiliser may be compounded, calculated both to act speedily, and to maintain fertility for a length of years.

Setting aside, however, the efficacy of dissolved bones in encouraging vegetation when the state of the soil or the season would make slow manure worthless, it enables us, whether applied separately or in compost, to secure either a late or an early crop at pleasure. And the importance of this discretionary power has een thus illustrated:—

"The advantages of an early crop are well known when we want food for sheep in the autumn. An early crop of turnips, too, will give more food than a crop of rape, and let us get a crop of wheat after it quite as well. By sowing rape occasionally, we are able to get a weedy fallow clean; and this is of importance to a whole rotation. Weather also, and other circumstances, may make us in some cases later with sowing than usual. The means of hastening and securing a crop are, therefore, of some value."

Sufficient has now been said, we hope, to induce our readers to inquire further into the theoretical and practical evidence connected with the subject, instead of treating it with scornful doubtings, or bold denial based merely on preconceived opinions.

Good as both the theoretical and practical authorities, which sanction a method so novel and striking, may be, we do not expect that it will in all cases meet with that consideration which its arguments, on their own merits, are entitled to. There are many motives which make it difficult for anything that is contrary to cherished opinions to obtain a fair footing in minds. Reason is often shut up within the fortifications of prejudice or vanity, lest preconvictions should be assaulted and taken by them.

The value of guano was at first denied, and after two years' experience as generally doubted —yet at this moment it is welcomed alike in the cotter's garden and the conservatory; and the cit who farms a Mignonette box, vies with the lord of a thousand acres in praise of its efficacy.

On the other hand, there are those who seize upon a new theory with the alacrity that an exquisite adopts the newest cut. A minnow in their eyes becomes a whale. Their mountain, however, very often brings forth a mouse, and consequently their opinion adds little weight to any cause.

Both these classes—the sceptic and the enthusiast—retard the progress of that which, though new, is really true. They are, however, possessed of counteracting influences, and thereby, perhaps, produce less positive evil than might be imagined. If the one sometimes demolishes a foolish project, the other as often saves a good idea from perishing by neglect. The only evil which really useful discovery encounters from these opposite and equally erroneous influences is that of delay.— One class cares not for argument, the other does not wait to be convinced, and it is only when the combatants have exhausted themselves, or found a fresh *Casus belli*, that sober judgment comes in and decides acccording to reason and to fact.

Upon these grounds we cannot expect to meet with unanimity of sentiment on the subject which we have now gone over. On the contrary, it is now undergoing the probationary contest to which we alluded, and we are not surprised that the evidence which supports the theory is doubted by some of our correspondents, or that the advantages which are claimed for the practice are denied by others.

◆

COLTSFOOT AND OTHER WEEDS.

A CORRESPONDENT who signs himself "*Rusticus*" wants to know how to clean land from *Coltsfoot*. I have cleaned land effectually. I would either plant potatoes or summer fallow; if the latter, I would plough the land into four furrow ridges; begin with 4 inches deep, and reverse the ridges, ploughing deeper every time until

10 inches deep. If planted with potatoes I would make the drills 3 feet wide: I would put as much dung to the acre as 2 feet wide: when the potatoes have been planted a week, if the land be dry, I would plough a single furrow in each drill 4 inches deep. Perhaps you may see hundreds of white roots: I have seen thousands. If the weather be hot they will all be dead in two or three days: then plough a second furrow, *always ploughing the land dry;* then reverse the furrows singly ploughing deeper every time until 10 inches deep. Be careful not to bury the roots till they are dead; lose no time after they are dead. If the land must be kept clean from weeds the *blacking principle* of ploughing must be entirely abandoned. I agree with Mr. Rothwell that the bad use of the plough has done more injury to the farmers than any one thing connected with agriculture. I believe if the plough is properly applied it will improve all descriptions of soils; if not it will prevent the land being productive.—*Ralph Seddon, Kersley, June 17th.*

◆

I would recommend your correspondent *Rusticus*, who enquires the best mode to eradicate Coltsfoot, to give his land a deep ploughing after harvest, and immediately after to collect in the best manner, and all he can, of the coltsfoot *roots;* then to dress his land with 16 to 20, or more, loads of pig dung per acre; plough it in and let it lay till spring, when, if any coltsfoot appears, he must again root it out and crop with oats, with which I would strongly recommend him to sow grass seeds. This plan will effectually eradicate the troublesome weed of which he complains, provided the land has been, as he states, well underdrained.

It may not be known to *Rusticus*, and many other of your readers, that this pest is not without its value. At Birmingham (being previously well dried) it is sold at 3*d*. per oz. as *herb tobacco*, and a decoction was formerly much used in scrophulous complaints.—*R., Chat Moss, near Manchester, June 22.*

◆

New Reaping Machine.—I beg leave to mention to your readers that I am at present engaged in the construction of an efficient *Reaping Machine.* It of course is upon a different plan from those hitherto tried, and which have universally failed. I conceive the great blunder of those previously in the field was their abandonment of the *syckle*—the most perfect instrument for the purpose ever invented, and which I believe has stood the test of at least three thousand years. All I aim at is to put *animal* or *mechanical* power to the syckle, with auxiliary machinery for gathering, but on an extremely simple scale. I shall be happy to make your paper the medium of introducing my progressive improvements to the agriculturists of Cheshire.—*James Wilkie, Uddingston, near Glasgow.*

◆

NO. IV.

ON HOUSING MILCH COWS IN WINTER.

"Nunquam aliud Natura, aliud Sapientia dixit."—
Juvenal, Satire 14, *v.* 321.

What Nature dictates and approves,
Good sense maintains, because she loves.

"We're bound to drive the cows and bullocks,
All by hollows, hirsts, and hillocks,
Through the sleet, and through the rain.
When the sun is beaming low,
On frozen ground and hills of snow,
Bold and heedlessly we go,
And all for little gain."
The Mac-Farlane's Pibroch.

It has been observed upon the previ letters relating to *summer* stall feedi milch cows, and the caveat against it your February correspondent, "that so from the cautions of the latter being cal for, he should have waited till Eng farmers generally had adopted *winter* feeding, and that Hark Forward sh have begun, as a preliminary step, noticing and recommending *common* cas cattle in *winter*, as lesson the first, expecting lesson the second, the uncommon care of them in *summer.*"

On reverting, however, to my first

second letters, it will be seen I did not overlook this point, upon which I indulged in some raillery at having seen while passing down a Cheshire lane in midwinter, a valuable herd of cows turned into fields, the colour of which was anything but inviting to cattle, being what Punch would call "an invisible green," owing to the intervention of a stratum of snow, a production of nature not very acceptable to ruminants. By the bye, Festina Lente made a droll tumble upon this spot, having put the farmer's cows into the lane which I occupied as a contemplative spectator, they being hardly so well off as occupants of a bleak field commanding an extensive prospect for the eye but none for the stomach to rest upon. He supposes also "that they were passing merely to or from their place of milking," from which it is evident that the practice of turning cows into the fields in *winter* did not appear to him unusual, and as I understand he is a Norfolk gentleman, I am led to conclude that the practice may prevail in the eastern counties, especially as at page 33 he suggests the housing of milch cows "during the severity of the winter season, when the pastures are in such a state from frost or wet that they will yield no food." Truly if the Norfolk folks turn their cows out under the latter circumstances, it is high time to inquire what they do so for, and to advise them better. One reason for making me fear that this may be true of Norfolk is, that is here and there true even of Lancashire, a county which being more extratropical than Norfolk has more need to be careful of its live stock, for on the very day which I read your Norfolk correspondent's comments, I passed a farm near Eccles, (famous for its cakes and wakes) the cows of which were out in fields hardened with frost and covering fast with snow that fell for hours, certainly without benefit to either the coats of their skins or their stomachs, judging from the soaking the *top coats of myself and son* acquired that afternoon, and from the altered complexion of a new hat "warranted waterproof," which I had the misfortune to have on. I think it will be pretty generally admitted that farm practice such as this, on land within four miles of Manchester, is, (as Mr. Robins the auctioneer has it in his advertisements) capable of being highly improved. A friend (from what point of the compass I need not state) assures me that this practice so profitable to cattle insurance companies if not to farmers, is as common in his district as if cows were as cheap as February rabbits, and their owners "as mad as March hares," and I am moreover told that what Fuller the historian said of Cheshire husbandry in his day is not wholly inapplicable to that county now, although cows pay its rent and support its farmers to such an extent that some of them might say of milch cows what a worthy farmer of my native county (Nottinghamshire) left on record upon his gravestone respecting another valuable animal.—

> "I thank God and ever shall,
> "It was the Sheep that paid for all."

As I do not remember to have seen the passage referred to quoted by any of the rural writers of Chesire, Mr. Wedge, Dr. Holland, or Mr. Palin, its introduction may prove interesting to some and entertaining to others:—"This county," says Fuller, "doth afford the best cheese for quantity and quality, and yet their cows are not (as in other shyres) housed in the winter, so that it may seem strange that the hardiest kine should make the tenderest cheese." As these hardy kine of Fuller's time (1660) are, however, now superseded by short horns and other tender breeds, it appears but reasonable to enquire whether tenderer treatment is not requisite in this age of improvements. I for one am of opinion that a racehorse could not be expected to thrive, if managed like a Shetland pony. The virtue of Cheshire cheese did not, however, lie in its kine, hardy or soft, though Fuller's constant love of puns and jokes favours that impression, for he continues—"Some essayed in vain to make the like cheese in other places, though from thence they fetched both their *kine* and dairymaids; it seems they should have fetched their ground too, (wherein is surely some occult excellency in this kind,) or else so good cheese will not be made. I hear not the like commendation of the butter of this county, and perchance these two commodities are like stars of a different horizon, so that the elevation of the one to eminency is the depression of the other." The doctor's inference about Cheshire butter is, however, not necessarily correct, the greater celebrity of the cheese not making the butter bad, though throwing it into the shade; as the Ormskirk people are not necessarily bad makers of penny loaves, because they make good gingerbread.

He is still more in error respecting the housing in winter of kine in "other shyres," for my first letter shews that four-score years previous, "the housing of cattle while winter doth hold" was considered "good for all such as are feeble and old," but was evidently good for none else; and fourscore years after Fuller, we have it upon very good authority, which I shall quote in my next, that "housing" cattle in winter was only then beginning to be introduced into several counties; and in 1810, it had not yet extended to some southern dairy counties, for in Lysons's Magna Britannia, vol. ii, is the following note upon the subject:—"The cows are now housed in the winter in Cheshire, although they are not in many other counties, and in some districts much celebrated for the excellency of their cheese, as North Wiltshire, Berkshire, the Vale of Gloucester." Of Rodmarton, in the last named county, the Rev. Daniel Lysons was Rector. Not to enlarge upon this point, which living witnesses assert to be undeniable, I pass on to the mention that in my third letter I alluded to "Dossie's memoirs" as the depository of the Transactions of the Society of Arts, a work which I have since had an opportunity of referring to, but which, I find, contains no article upon the subject of summer soiling; but in the "Museum Rusticum," a highly interesting publication, conducted by members of that Society, from 1763 to 1766, is a valuable article by the Rev. Dr. Comber, Rector of East New-ton, near Malton, Yorkshire, upon the subject of "housing cattle in the winter." As this essay contains some very powerful arguments equally favourable to *summer* as to *winter* "housing," I purpose availing myself of it in your next, not merely as "lesson the first" for those farmers wh still *winter* their cattle in the fields, bu because, with respect to "lesson the secon on *summer* housing, it will be obvious th the historical sketch I have attempte would not be complete without carrying along with it the very valuable and now rare observations of Dr. Comber.

Of the above work it may be interesting t notice that it contains under date of Dec. 2 1764, a curious and clever article (perhap the first production of *rural* literature) o the subsequently celebrated Arthur Youn The article is anonymous, but gives evi dence of its authorship. The subject i "The usefulness of a knowledge of foreig practices of Husbandry," in which h sketches a plan for the acquisition of rur information, afterwards carried out by hi in his once pupular volumes of "Tours;" he was at the time very young, being i his twenty-second year. He had writ upon other subjects long before, and eve started a literary periodical which it is sai he gave up after the sixth number by th advice of Dr. Saml. Johnson. It is a re markable fact and indication of men vigour, that this great ruralist in the ye in which he *left School* and *went appren* to a merchant at Lynn, *wrote a politi pamphlet!* "on the war in North America," the merit of which must have been great, since it procured him the then large sum of ten pounds, a treasure to a youth of

;—circumstances these, which
th while occasionally to place
young men of our own times,
hom have fine opportunities af-
m in your pages and elsewhere
g themselves and the all impor-
sion of agriculture, the advances
n their day, is sure to leave be-
who dont like *thinking* or who
poor Pat M'Murphy, that

t divarsion that's under the sun
ze by the fire till the praties is done."

Hark Forward.

ave to apologize for unavoidably
the promised sketch of Tusser's
which I hope will appear in
and I ought to have stated that
oung took his ten pounds out
ublisher in *Books.*

◆

ON PLOUGHS.

am not going to have all the
ugh-makers at my ears. You
me a word or two with my old
Wilkie, who, I see, has made
arks on my letter on Scotch

rst place I am quite in favour of
s, but any form of a plough can
f iron. Although Small's im-
ugh was made of wood 30 or 40
it does not follow that that form
should still be made of wood.
wrong in calling my favourite
the name of "Small's improved
considerable number of ploughs
name came into Lancashire from
ears ago, to several gentlemen
ted Scotch bailiffs and plough-
y were made by one Mr. Vitch,
h, in Roxburghshire, and who
foreman in Mr. Small's manu-
Edinburgh. Mr. Vitch might
alteration or improvement upon
lough." To prevent mistake I
em "Vitch's ploughs." I find
l friend considers I never could
ll, and that my feelings are rather blunt. Still I shall not allow him to persuade me that the sole of "Vitch's plough" was not concave to the extent of 3 inches, or very near it. This was a point which was particularly examined into by ploughmen and ploughwrights, and I have worked myself many hundred days with Vitch's ploughs: of course what I stated was a little "fact." Another little, little "fact" is, that often when ploughing with "Vitch's plough" I have left the plough when going to alter a rein or some other thing about the horses, and when I returned to the stilts it was still cutting and turning up the land correctly. My brother has remarked that he had often done the same. Now we are both six feet men, and when at plough could walk upright. I had always a difficulty in keeping myself warm on a cold day when I was ploughing my statute acre of strong land, and three inches deeper than any of my neighbours. These little "facts" prove that the *stilts* were in a proper position, and that the plough was easy to hold. My horses could not speak; but I have no doubt they would have preferred "Vitch's" plough to any I have seen since. I have had Wilkie's ploughs, and I like them well, in short, better than any other Scotch plough now made; that is, better than any I have had experience in. Mr. Wilkie talks of the flexibility of the present Scotch iron ploughs, and that a *clever* blacksmith and an *intelligent* ploughman can mould them to anything. To be sure they may, but I can find few of these *clever, intelligent* men. The blacksmiths are not all Wilkie's. I seldom put a plough into a blacksmith's hands to alter but he spoiled it. I have known some make ploughs for more than twenty years, and have never made one that I would give sixpence for, and yet they have been sold and used.

Now for the angle of the furrow. Mr. Wilkie is out in his geometry when he says that the seed is deeper covered when the angle of the furrow is acute than when it is a right angle. In this he had better go to facts than theory, and examine the land when harrowed. He will find that the seed will be covered the same depth in both cases provided the ploughing be the same depth in both. I once thought as he thinks, but facts told me different. A Mr. Sullivan, of East Lothian, in the last *Farmers' Magazine*, pretends to show, by a diagram, that the case is as Mr. Wilkie says; but if any one will apply a scale to his diagram he will see at once that the right-angled furrow is not as deep a one as the other, measuring it at right angles. There is also deception in the acute-angled furrow; and, at most ploughing matches, the judges neglect this point, and the ploughmen and farmers are deluded by it. A furrow of 5 inches deep, with an acute angle, will appear, and will measure, (according to the common rules of measuring) 6 inches deep or more, according to the angle. Thus one ploughman may be ploughing only 5 inches deep, and is considered to be ploughing as deep as his neighbour who is ploughing 6 inches deep, and by this means can put a furrow or two more in a ridge, which is considered of great importance by most farmers, although I do not think so. It is agreed by every one that the labour to both men and horses is far greater under the newest fashion of ploughing leys than when a right-angled furrow is cut. Mr. Sullivan, before mentioned, says this is the case. At every ploughing match I have been at, these several years back, I have been sorry for the Scotch ploughmen and their horses, to see the heavy labor they had to go through, and in general have been from one hour to one and a half longer than other ploughmen in doing their work, and when harvest has come have seen no better crop upon the land, in some cases worse than when the furrows had been well cut and well laid, but cut at right angles. Mr. Wilkie must *not talk* of the ploughmen being in an upright position when at work with these *ploughs*, for their bodies form nearly as acute an angle as the furrows they cut.

The grassy surface will be quite as well covered with a right-angled furrow as with an acute-angled one, if the ploughman understands his work, and his plough be in order.

In my last the serated solid ground unde the furrows is not properly described. I only used a pen without rule.—*W. Rothwell, Winwick, June 23rd.*

◆

GROWING POTATOES FOR SEED.

I HAVE been in the practice of planti some of our old favourite kinds of potatoe in June, to renew them by quick growi for next year's seed. I plant them on ri land, with little dung, that they may gro in their natural state, and lift them in Au gust, or as soon as they are from one inc to an inch-and-a-half in diameter, that th juice may be in them. One argument i favour of this system is, that the top eye any potatoe is the freshest seed : now every eye was once the top one, and fresh still when the potatoe was younger. It i not many years since we were all in th quarter forced to plant unripe seed, on a count of early frost before lifting time, a there was no failure that year. The fresh seed I ever had was raised in two months planted on the first of June, and lifted the last day of July. A few of them w sent on trial to where the disease was m prevalent, and not one of them gave w while others around them failed. Oth plans have failed with me, such as, fr new land—planted on new land—and cut seeds, though lately raised from plumb. Any person who has a few of so old favourite kind, kept in some cold pl for summer use, should plant a few of th now when the growth is so rapid, in or to preserve our old kinds a little lo which, according to the way of the wo must soon give place to new ones, as I convinced that old age is the cause of failures.—*A. F. Reid.—Bonshaw, 5th J* 1845.

E AS FOOD FOR CATTLE.

he month of October last, a field of
s sold in the parish of "Bettws,"
high price; which statement was
d in the newspapers.

terest excited has been very con-
; and I don't know a better way
ng to the inquiries for information
e been made, than through the
of your widely-circulated journal,
ll permit me.

l gentlemen in the immediate
rhood were attracted, by the high
furze fetched, to examine the
l had several square yards cut, and
und to weigh 14 lbs. the square
30 tons per acre. The crop of this
ing been of good quality, many
thereabouts, from whom I have
quiries, do not think the price it
at too high, hay being from £5 to
er ton.

never grown any from seed my-
I intend to sow a field of four or
s this spring with them and oats,
o better with oats than barley in
rict, as they may be sown earlier
oats, probably they would do better
selves, but I have never heard of
ng so tried. All that is required
he soil should be dry—gravel, or
dry soil near the rock—sandy soil,
think, would do, but we have no
l where they are cultivated near
t is, perhaps, surprising that they
s yet only have been cultivated by
rmers who rent £40 a year, down
ttager who can only keep a cow;
gh all our farmers praise and prize
to all other food, few cul-
a very small piece in
rm.

Fre
seed—
ou
mber
hey
sown
like

young turnips. A farmer, however, cannot know much as to the cause of failure of a seed like this, which does not require to be sown twice in his or his children's lifetime, for we have fields near here, sown above 40 years ago, which were as flourishing last autumn as ever.

The plants must be well fenced, particularly from sheep, and cut every two years, first cutting the strongest half of the field; they are cut with a splashing hook, a kind of strong reaping hook, and not very near the ground, but as near as possible to the green part or branches, and are to be continued to be cut until the end of March, and then the farmers here go over the ground again, cutting the stumps upwards clean cut, so as not to retain the water, and as near the ground as possible: by thus treating them, they will, at all events, continue good for half a century. They overgrow and stifle grass, but briars must be rooted out; and, if any bare patches, the ground turned up, and a few seeds thrown in.

The practice formerly adopted here was to bruize the furze for food by a mill, or pound them in a trough; but since the introduction of cutters, they are generally cut as chaff, and mixed with hay or straw, or given alone; and so fond are horses and cows of them, that they will leave corn to get at them. If given in too large quantities, it is said they heat the cattle and horses, that consequently they rub themselves and lose their hair. I have given some to my horses with sliced Swedes, and they did well on them, though they work very hard. I am much pleased with the experiment, and mean to adopt the plan of furze, chaff, and Swedes, with half the usual allowance of corn, for our colliery horses.

I cannot find that they have been at all tried to feed cattle; I am no feeder, otherwise I would certainly try them.—*Christopher James*, *Swansea*, May 2.—Globe.

USE AND ABUSE OF LIME.

At Cardiff Farmers' Club, Mr. David read a paper on the Use and Abuse of Lime. He said, "My remarks shall apply more immediately to the abuse than the use of lime. It is true that lime has hitherto been considered as the staple manure of this country, and almost the only artificial manure used until very recently, for in most of our old leases, covenants are introduced to require the frequent application of it; but I am inclined to think that at a more remote period marl was the general manure used. At what period the change took place it is difficult to say, but I should think at least a couple of centuries ago. We have had many marl pits in this country, which appear to have been worked very extensively. I have several on my own farm, containing marl of excellent quality; and in these excavations, trees of large dimensions have grown, such as oak, beach, elm, &c., but decayed inside; and as they could not have stood there during the period of working, I conclude the pits must be of the age mentioned, while our lime-kilns and quarries do not present the same evidence of antiquity. Farmers are proverbial for clinging to old habits and deep-rooted prejudices, and more tardy in the adoption of improvements than any other class. Perhaps there are few subjects which evidence this feeling in a stronger manner than the use of lime by the farmers of this country. I am willing to admit that in some degree this feeling is praiseworthy, so far at least as it proceeds from a desire to keep the land in good heart; but when it is entertained and acted upon, to the exclusion of all other manures, and to the neglect and waste of many equally as valuable, it becomes an evil, and an evil of a very expensive nature. How often do we witness heaps of dung left to lie about the small farm-yards throughout this country for two or three years, frequently on sloping ground, exposed to the washing of the winter's rain, and again the absorption of the summer's sun, until scarcely any traces of it remain; while at the same time the owner may be expending no inconsiderable sum in procuring lime from a distant part of the country, which occupy his teams at a season of the year—generally May or June—when they might be far more beneficially employed in fallowing or cleansing hi land for turnips. I would investigate beforehand the expense of summer-fallowing a liming with the same degree of research whi they evince in valuing these operations wh they become outgoing tenants. I have ma an estimate of the cost of 10 acres of summ fallow, with lime in the usual way, and also another for 10 acres fallowed for turnips, wi dung or other manure. These estimates I sh be happy to submit to the meeting, hoping th I shall have the opinions of other memb upon it. Expense of 10 acres of naked fallo limed:—

	£	s.
10 acres ploughed 4 times, at 8s.	16	0
Dragging & harrowing 5 times, at 2s.	5	0
Rowling, scuffling, &c., at 3s	1	10
220 crannocks of lime, hauling, spreading and covering, &c., at 3s. 6d.	38	10
1 year's rent & parochial rates, at 30s.	15	0
Do. tithe rent charge, at 4s.	2	0
Fencing, mole-catching, &c., at 2s.	1	0
Total cost, exclusive of sowing wheat	£79	0

"N.B.—When the lime is mixed with e in the headlands, the expense is increased or £2. per acre. Expense of fallowing 10 a for a crop of turnips:—

	£	s.
10 acres ploughed 5 times, at 8s.	20	0
Dragging & harrowing 6 times, at 2s.	6	0
Rowling and scuffling, at 5s.	2	10
Raking couch, &c., at 3s.	1	10
250 loads of dung, at 1s. 2d	14	11
(or 1½ ton of guano, at £8 per ton.)		
Spreading dung, at 3s. 4d. per load	0	15
Drilling Turnips and cost of seed, at 8s. 6d.	1	15
Horse-hoeing the Turnips twice, at 5s.	2	10
Thinning out the plants, at 5s. 6d.	2	15
1 year's rent and parochial rate, at 30s.	15	0
Do. tithe rent charge, at 4s.	2	0
Fencing, &c., at 2s.	1	0
	£70	6
Deduct the average value of 10 acres of Turnips, at £4.	40	0
	£30	6
Extra expense of 10 acres of summer-fallow	£48	18

"According to these estimates, the ext

ummer-fallow would, after deducting
of the turnip-crop, be £48 18s. 0d.,
4 18s. 0d. per acre more than with a
p. This is at the end of the first year
corn is set in either position; and I
nion that provided the turnip crop has
umed on the land, that this is in far
er for the ensuing crops of corn, clo-
than the land after naked fallow, ma-
y with lime. I do not believe that I
ned any item to produce this result;
ly charged 22 crannocks per acre for
n it is well known that 25 or 30 cran-
frequently applied; and for swelling
ll by an outgoing tenant, the lime is
ed with earth, and a second hauling
rged for. I beg that I may not be
stood as objecting to pay the fair
an outgoing tenant; on the contrary,
ing improper has been done I wish to
liberally, otherwise we should find
would be wholly neglected towards
the holding, and be left without either
fallow. I am also of opinion that
e in general too niggardly in valuing
ion of land after turnips; and it often
hat it would have been better for the
enant that his turnip crop had failed,
at he may have the land valued as
ow. A notion prevails that artificial
vill produce turnips only, and that the
crops will derive little or no advan-
them. With respect to guano, my
of it extends only to about three
e first time it was brought to public
at the annual meeting of the Royal
al Society in Liverpool, in 1841, by
ing, and therefore the period is too
ve any opinion of its effects beyond
rley, and clover, which have all been
t I have had upwards of 10 years'
of bones with the most satisfactory
fter a dressing of 22 bushels per acre
a fine crop of turnips, which were
d year a good crop of barley; third
llent clover, and the fourth year, a
of ley *wheat than I had ever grown*
ce before, which was 15 acres, and

the soil naturally weak, and not manured for three or four years previous. This is not an isolated case; I might refer to many others, as I have annually for the last 10 or 12 years dressed from 20 to 25 acres with artificial manure." Some members having remarked that the price charged for the dung was too low, for if purchased it could not be had at that sum, or if made on the farm there was scarcely any allowance for it. The chairman fully admitted the objections made, that the price he had named was not sufficient to purchase dung, and haul it to the farm, but he begged to remind them that this was now wholly unnecessary, for other manure might be had in abundance below that price, and therefore he saw no reason for charging a higher rate for manure than it might be procured for. He had recently purchased 20 tons of guano at £7 10s. a ton, and 3 cwt. per acre would be a good dressing, amounting for the 10 acres to £11 5s. instead of £14 11s. 8d. charged for the dressing of dung. Besides, he could not value the dung made on the farm at anything, as it was the produce of the land, and should not be sold, and 1s. 2d. a load would be more than ample to remove it to any part of the farm. Artificial manures had produced this great revolution in farming, by making us independent of farm dung, and reducing the cost of manuring, almost in any situation, to a moderate and a defined sum. With regard to the best mode of using guano, the chairman stated that charcoal ashes possessed the quality of attracting the ammonia from the air, and fixing it in the soil, and he recommended it in the proportion of 2 bushels to 1 of guano, where it could be procured. Burnt turf from the sides of hedges was an excellent mixture, as it was in itself a rich manure. In the absence of either of these, coal ashes, sifted fine, would be found a good substitute. Mr. Evan Edwards stated that he had paid some attention to the subject of liming land, as he had always considered it one of very great importance to the farmers of this county. He should be glad to know the opinion of the chairman as to the most judicious mode of application, whether in a caustic state or otherwise;

also the best period of applying it if the summer fallow system was to be discontinued. The Chairman said that the points referred to by Mr. Edwards were of great importance. He considered it useless applying lime to land unless you could incorporate it well with the soil, which could only be done when the land was in fallow. The plan recommended by Mr. Lewis, of applying it in small doses and frequent, to the Turnip land, had this objection—that the operation must be done at a very busy period of the year. The most satisfactory way he had applied it under these circumstances was by fallowing the Clover ley in the autumn, and dressing it with lime. With regard to the state it should be applied, he strongly recommended it in a caustic state, by drawing it out over the field into small heaps, covering those immediately over and spreading them about as early as possible after slaking then ploughing it in. One of the most valuable properties of lime was, that it decomposed any vegetable substance in the soils which it came in contact with, bringing it sooner to a state of putrefaction, and rendering it in a proper state as food for plants. Now this could only be effected when the lime was in a caustic state, for after exposure to the weather it reverted back to an effete state, and was inefficacious for the purposes he had named.

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ON THE ATMOSPHERE OF STABLES,

WITH A DEMONSTRATION OF THE NECESSITY THERE EXISTS FOR THE ADOPTION OF IMPROVED STRUCTURAL ARRANGEMENTS IN THE FORMATION OF THEIR FLOORS.

THE frequent and violent exertions which man requires of the horse, renders it a matter of the highest importance that the animal's physical condition be as perfect as skill and attention can secure; and as there are no organs of this noble animal so severely taxed, during the performance of either fast or heavy work, as the organs of respiration, it is obvious that too much attention cannot be given to all circumstances which tend to secure perfection in the condition of that delicate apparatus which plays so prominent a part. It is no matter whether the animal be of the high bred order, legitimate profession is to skim over the tu a speed that far outstrips the wind, or bou hedge and ditch like the matchless "Blu or whether he is exercising the more (but, it may be, quite as useful) callin ducing locomotion of the heavy drag--all perfection in the condition of the thoracic A pure and uncontaminated atmospher respects suited to the process of respir therefore a *sine qua non ;* one cannot these reasons, expressing surprise at th universal inattention to stable ventilatio so lamentably prevails in even many first-class establishments. But ther circumstance connected with domestic appears to me more extraordinary almost universal want of attention to arrangements in the construction of buildings of every description, both pu private, from the largest theatre, or hall, down to the cottage of the mos peasant. It is not, therefore, wond gross errors may be discovered in the t devoted to the accommodation of our animals. That these occur to a muc extent than many intelligent persons of, I shall presently show. I hope I fidently presume, that most educate are aware that air once breathed by a is, by the simple process of respirati verted into a deadly poison, and, should be instantly removed from its and replaced by a proper supply of a wholesome air. It is well known that th of the air is absorbed, and carbonic a thrown out at each expiration—a gas w ther supports life nor combustion: of of this the unhappy fate of the unfortu ferers in the Black Hole of Calcutt painfully demonstrates. I could cite, necessary, numerous familiar illustratio subject, but I have no doubt the followin will serve to inform such of your reader not hitherto have given especial cons to theories of respiration, and who are, unaware of the importance which at the subject:—

All have heard of the fatal accidents that cur in breweries, from persons incautiously scending vats while these are surcharged with e products of fermentation. It is the *carbonic id gas* which kills the individual in this case; d who is not aware of the danger of descendg close, deep wells, where *foul air* has acculated, and rendered the atmosphere obnoxious human beings? Again, *carbonic acid gas* roves to be the baneful agent: few, perhaps, e cognizant of the fact, that if a bird be susnded from the room of a closely encompased d, the creature is speedily put to death—it is isoned by exposure to the carbonic acid gas— e natural product of the respiration of the rsons occupying the bed! Although this gas naturally heavier than common atmospheric , it nevertheless, when heated by the process respiration, becomes much lighter, ascends, d occupies the space nearest the roof of the mber where it may have been produced, so t persons near the floor, having a plentiful pply of cold air, may suffer no inconvenience, ough they, most assuredly, by each act of iration, are slowly and silently contributing the destruction of the ill-fated victim in the e. But the products of respiration, poison- although they be, are the result of vital nomena, and, therefore, cannot be dispensed nor prevented: but the *grand source* of *ation* to which I am desirous to direct atten-, is both removeable and preventable, because dependent on the ammoniacal gas which is ngaged from the decomposing urine that is orbed by the porous floors of stables. Now me shortly describe the condition of stable rs as these are usually (I may say invariably) structed—and suppose we take a stall in the rs-hill Barracks as our text: Nothing could more unscientific than the arrangements ch are here everywhere to be observed. All seems to have been aimed at is to secure a l *and resisting footing* for the animals, and this may be effected at the *cheapest* rate, following mode of procedure is practised:— lders, or irregular blocks of stone, are placed bed of *sand or small gravel, (I beg especial ntion to this circumstance,) and it is* believed that when these are made to present a *fair surface* that the "job" has been creditably executed; but what are the facts? They are simply these: When the liquid manures of horses are dropped on such a floor as that which I have described, they rapidly percolate between the interstices of the irregular stones—decomposition immediately ensues—and deleterious gases are abundantly disengaged. I would, therefore, beg to press upon the attention of all whom it may concern, *that the principle of rendering stable floors impervious to moisture should never be lost sight of;* without attention to this *desideratum* the most ingenious schemes for ventilation must be stultified! So rapidly do the component parts of urine assume the gaseous form, that it has surprised many to find, on examining an imperfect floor, that percolation has extended to so small a depth, but the true explanation of this circumstance, no doubt is, that the recently dropt urine comes in contact with materials in a high state of chemical action, which, like yeast to the wort, immediately induces a similar condition in the atoms of the recent materials, ammoniacal gas is formed, which ascends and pervades the entire apartment. The irritating ammoniacal gas I have frequently found, on going into a stable in the morning, so concentrated that I could not breath without coughing, and my eyes lachrymated as if a newly cut onion had been hanging under my nose. Now, the products of respiration contributed but in an inferior degree to this state of vitiation. *I repeat again that it is impossible to preserve the purity of the atmosphere of a stable, while its floor continues pervious to moisture.* I, therefore, cannot too strongly urge this fact upon the attention of every one who may find his stables in an objectionable and unwholesome condition; and it will be satisfactory to know that the means by which the desired improvement may be effected involves neither difficulty nor expense.

Let the centre of the causewayed stall be removed two feet in breadth, and five feet in length, measuring from the croup end of the stall. Flags of sandstone pavement, of one foot in breadth, three inches thick, and of convenient length, having the inner or central edges beveled to such an angle as that when the two are brought together there will be a space or central gutter formed like an inverted V, one inch and-a-half in breadth at the surface, and two inches deep at the apex of the inverted cone, which space must be filled with cement or pitch—a slight downward and backward inclination must be given to the paving stones, so that whatever liquid may be dropt upon them, shall be rapidly conducted towards the hind quarters, and from thence conveyed *on the surface* to the point in the exterior found most convenient for a tank, or reservoir, where it may be stored till required as manure. I find the making such an arrangement as I have shortly described would cost for materials about 10s. per stall—10 feet for each stall, and 10 feet for that part of the floor immeditealy behind the animal opposite his stall. A most superior article I know could be furnished by Messrs. J. Paton & Sons, of Ayr. The excellent quality of their sandstone, and the great advantages their ingenious and powerful stone-cutting machinery, gives to their establishment a peculiar claim to preferment.

I shall conclude this perhaps already too extended communication, by assuring gentlemen who may adopt such structural arrangements as I have proposed, that they will have no reason to regret their conduct; as to the pecuniary outlay which these improvements would require you'll

> "Let me whisper in their lug,
> That's ablins nae vexation;"

because all that is to be done is to give their noble animals (whose faithful servitude deserve so well at their hands) credit for one year, as the following statement will clearly demonstrate. A horse voides more than 3lbs. of urine daily, or say—1100 lbs. per annum=21 lbs. ammonia=180 lbs. guano, 10s. So that he pays like a *gentleman* for the enjoyment of an unvitiated atmosphere.

The necessity there is for rendering stable floors impervious to urine appears to me so obvious and apparent, that I flatter myself no sensible man who may chance to cast his eye over this hurried and imperfect paper will hesitate for a moment in adopting some plan, which shall have the effect of rendering his stable floors impermeable to liquids. Un this is effected, it is idle to talk about a ventilating scheme whatever; therefore, I reform your stable floors ! ! !—*W. Dyce Guth Edinburgh*, 1, *Lothian Road*, *9th June*, 1845.

P.S.—It will afford me great pleasure communicate with parties who may desire m minute information on this most important, I think highly interesting subject.—W. D —*Ayrshire Agriculturist.*

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TRIALS OF SULPHURIC ACID A BONES FOR TURNIPS.—1844.

Field No. 1.—Soil, sandy loam, upon old red sandstone so completely worn out by the late tenant, that a part without any manure, lying *between* the acre with the acid and bones, and the acre with dung, produced only per acre	T. 0
One acre manured with 160 bush. of turf ashes wetted with water	8 1
One acre manured with 160 bush. of turf ashes, 2 bush. fine bone-dust, and 80lbs. brown acid (oil of vitriol) costing 12s., the bones and acid dissolved and treated as below	14
One acre manured with 20 yards of dung	14 1
This field was limed with 108 bush. per acre in 1842.	
Field No. 2.—Soil, stone-brash, upon old red sandstone, limed 1841.	
One acre manured with 15 bush. coal ashes, and 15 bush. charcoal dust drilled in with the seed, produced	4
One acre manured with 80 lbs. brown acid and 2 bush. of fine bone-dust, dissolved, mixed with 500 gallons of water, and sprinkled with a water cart over the land before ridging up, and 15 bush. coal ashes, and 15 bush. charcoal dust, drilled in with the seed	12 1

The Swedes (Skirving's) were planted the ridge the first and second week July, at 24 inches, the plants thinned nine inches; horse and hand hoed th times; pulled, topped, tailed, and weig Jan. 14, 1845.

I had the brown sulphuric acid, stren 1·750 at 0¾d. per lb. from that highly spectable manufacturer, Mr. James Gi Bristol, and the fine bone-dust of

lity, from Messrs. H. and T. Proctor,
stol, at 26s. per qr.

he acid and bones for field No. 1 were
ated as follows :—*For One Acre.*—An
pty hogshead of about 100 gallons, with
head out was used ; 2 bush. (or 16 gal-
s) of bone-dust was put into the cask or
, then 80lbs. (or about 4½ gallons) of
d, the mass being stirred, to this was
led 24 gallons of *boiling* water, the mix-
e being well stirred the whole time, the
ter was being put in to keep down the vio-
t ebullition that ensued in a few minutes;
bone-dust was perfectly dissolved and
or use. The mixture was then taken in
tub to the field, put by the heat of turf
es, which, being very dry, about 500
lons of water were gradually added to
mixture, and thrown over the ashes ;
ich, being well mixed, were then put
carts, and distributed with a shovel
the drills, the ground ridged up, and
nediately sown.

put in about three acres per day, using
e old hogsheads (worth about 5s. each),
when taken to the field two lots were
together, the empty tub being used to
the proper quantity of water before
wing over the ashes.

neighbouring farmer had one carboy
cid last year ; he used dried mud from
rse-pond to mix with the acid and
s, and he is so satisfied with the result
he has ordered 10 carboys of acid this
. My friend says the acid and bones
every other manure (guano, dung, &c.),
is the *cheapest* and best of all manures
rowing turnips. The soil (a poor sand)
limed with 108 bushels per acre imme-
ely before the mixture was put on.

am convinced that without lime in the
acid and bones will not act ; this I
essed in a neighbouring field last year.
field six years ago was part of a com-
a; it was then broken up, and part
d the following year ; last year the
le field was planted with *turnips*, using
bushels of bone-dust and 80lbs. of acid per acre, put on as my field No. 2. The result was, the part limed produced a good crop for the season, beating 15 loads of dung, but the turnips on the part not limed, although coming up well, very soon died away, and in less than a month not a single plant was to be seen.

In the field No. 2, the acid and bones were treated as No. 1 ; when taken to the field, a water-cask, holding 250 gallons of water (twice filled), was used with half the quantity of the mixture and sprinkled over the land before ridging up ; the ashes were then drilled in with the seed.

His Grace the Duke of Richmond's plan of running the mixture and water *along the drills (after* ridging) is a much better plan than the above, and which for the future I shall adopt when using the mixture in a liquid state.

I intend this year to put four bushels of bone-dust and 120 lbs. of acid per acre over the whole of my turnip land, about 50 acres, (with and without other manures), having observed that where the water cask went twice over the same ground last year, there was *treble* the weight of turnips.

In every trial of acid and bones, the turnips came into rough leaf a week before those planted the same day with other manures. I find the lighter or shallower turnip seed (indeed, all small seeds) is put into the ground, the better ; if the seed is just covered with the soil it is sufficient.—*R. W. Purchas, Pilstone, near Chepstow, May,* 21.

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SUMMER FALLOWS.

THE BEST MODE OF MAKING A GOOD FALLOW.

At the monthly meeting of Wingerworth Agricultural Society the subject for discussion was "The utility or inutility of summer fallows, and the best method of making a good fallow." The following is a brief sketch of the opinions given on the subject by the different speakers :—It was admitted that on dry soils summer fallows might be completely dispensed with, that on those of a more adhesive nature they occurred more frequently than was consistent with good farming, but that on strong wet soils they were indispensable. But even on the last-mentioned soils they would not so frequently happen (namely, every three or four years) if the land was effectively drained. When land required a fallow it was advisable to plough it in October, if possible, in the following manner, viz.—draw two furrows together to form a ridge, let the field remain so till the following February, and then cross-cut it. Others thought it more advisable to plough it in lands, reverse the ridges, and cross-cut the third ploughing; when the weather was sufficiently dry, break the soil down with a heavy roller, afterwards harrow and get off the couch grass, which must be led away and mixed with manure, to form a compost for another season; burning the couch grass and other kinds of rubbish not in seed was considered very wrong. The banks, &c., round the field, to be cut down close to the fences, so as to afford no harbour for weeds or vermin. More ploughings, draggings, &c., would be required to get the soil quite clean, but the number would depend in a great measure on the season. If lime was intended to be used, it should be got on in a quick state in June or July, but not later than August, that it might get well incorporated with the soil before sowing the wheat. When manure was used, it ought to be ploughed down at least three weeks before sowing. It would be found advantageous to adopt the following plan of fallowing on some kinds of land, in the general run of seasons: —When a field is sown with oats at spring, and it is not much overgrown with weeds, but yet would require a fallow the next year, sow rye-grass, trefoil, and some other early artificial grasses at the same time with the oats. These would afford early cropping for sheep and calves till the middle of May; it should then be broken up, and by proper working there would be plenty of time to make a good fallow. Land intended for turnips should be ploughed as soon as the last crop of corn is carted from it. No land should be selected for turnips that was exhausted by cropping, or that was overrun with couch grass, kedlocks, coltsfoot, or any kinds of weeds. After the debate on fallows had closed, there was some very interesting conversation on the application of clay from drains when land is in fallow. The chairman had seen wonderful crops from burnt clay, when used at the rate of 30 tons per acre; but great caution was required to burn it properly, and he thought that in a country like this, so abounding in clay soils, it ought to have a trial. It was stated that a gentleman well known to several in these parts, had by way of experiment, applied 20 cart-loads of good horse manure to an acre arable land that was a complete bed couch grass. The dung was spread an ploughed down early in spring—then sow with three bushels of good lentils. Th crop was very great, and scarcely a wee could be found when ploughed for wheat Michaelmas. The crops have been heav and the land in good condition ever sinc

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DARLINGTON FARMERS' CLUB.

THIS Club held their June meeting the 23rd ult., at the offices of Mr. Th Dixon, land-agent. The subject und discussion was "The hoeing and manag ment of the Turnip and Potatoe crop."

On this occasion Mr. Walton, the vic chairman, presided, and on opening th meeting he said:—Gentlemen, having a former occasion proposed the subject this afternoon's discussion, it now bec my duty, in conformity with a recomm dation from that meeting, to introduce th subject to your notice, and in doing will endeavour, as briefly as I can, to your attention to such points only as i desirable to gain information upon, co ing my remarks more particularly to hoeing and management of the turnip only; conceiving that, generally, this more importance to the majority of rmers in this district than the potatoe op. It may appear, gentlemen, like a gression from the subject, but as this scussion includes the management as well the hoeing of the crop, I will beg your dulgence whilst I refer back to the mauring and sowing; and last year, in order test the comparative merits of two or ree different descriptions of manure on a ld of average quality, I set out three stinct acres, and manured one acre with cwt. of Peruvian guano, another acre th 4 cwt. of superphosphate of lime, and other acre with 16 cart-loads of rotten ng, the expense of each of which was as lows :—

	£.	s.	d.
st acre, 3 cwt. of Peruvian guano, at 13s.	1	19	0
cond acre, 4 cwt. of superphoshate of lime, at 6s...........	1	4	0
ird acre, 16 loads of rotten dung or which say 4s. per load	3	4	0

The acre manured with the superphosite of lime was ready for hoeing seven s earlier than the acre manured with ino, and fourteen days earlier than the e manured with rotten dung, and conied to keep the lead of the other two es until the autumn; but when winter ived and the turnips were drawn I could n see no difference in the weight of the p, consequently I did not weigh them; had there been any perceptible difference I should then have tested the weight bulbs on each acre; however, all the ee acres were a good crop. I may also that in the wheat crop which is now wing on those three acres there is no ceptible difference betwixt one part and ther.

Now with regard to the hoeing and thinig of the turnip crop, I have generally en in the habit of leaving the plants at m ten to twelve inches distance in the rs, the rows being about twenty-eight ches apart from each other. In hoeing d thinning the turnip crop I consider it great im*portance to leave, if* possible, strong healthy plants and therefore rather than leave inferior or sickly plants, I would deviate a little from the stipulated distance, leaving occasionally two plants at a nearer distance than usual, whilst the next would be at a greater distance than ordinary. I would now observe gentlemen, that although, as I have before stated, I am in the habit of thinning my turnips to the distance of from ten to twelve inches, yet I am not certain that this is the best distance that can be adopted; for my impression is, that if a greater space were left betwixt the plants it would answer still better, more particularly in the case of Swede turnips, because it is at all times desirable to grow them as large as possible, and as I believe that turnips send out their roots to a considerable distance in the soil in search of food, I fancy that if Swede turnips had generally a little more room than what is at present allotted to them, that it would prove beneficial; and under this impression, although I have never yet had the nerve to thin my turnips to that distance, yet I fancy that if the plants were left as much as fifteen inches apart in the rows that it would be all the better.

A very animated discussion then ensued, both as to the distance most proper for thinning the plants, and also whether it were desirable to thin the plants to the proper distance in the first hoeing, or whether it would answer a better purpose to leave double the requisite number of plants in the first hoeing, and afterwards in the second hoeing to thin them out to the proper distance. Mr. Emmerson very strongly advocated the principle of leaving in the first hoeing double the requisite number of plants, he having very frequently found it of the greatest benefit in case of the crop being attacked by caterpillars and other insects, he considered that it then had a double chance of success. The majority were of a different opinion however, and at the conclusion of the meeting, it was resolved—That it was the opinion of the meeting that it is best to thin turnips to the proper distance in the first hoeing. It was also generally believed by the members that from ten to twelve inches was a a proper distance, but as no resolution was come to on that head, Mr. T. Dixon, the Secretary, suggested that some of the members should, by way of experiment, measure off a chain of land in an average part of their turnip field, and thin the turnip plants on this part, to fifteen inches apart on the rows, and see what the result would be.—The meeting then broke up.

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ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Weekly Council was held at the Society's House in Hanover-square on the 18th of June.

DEEP DRAINING.—Mr. Parkes exhibited a diagram, explanatory of the action of the 4 feet deep drains, described at a previous meeting in a letter from the Right Hon. C. Arbuthnot. Since that period, and during the recent heavy rains, a hole had been dug 5 feet deep, near the crown of one of the ridges of land, about 24 feet wide between the drains. The object of this experiment was to test the depth at which the water might stand after rain had ceased, and had passed off through the drains, and it appeared that free water pretty uniformly existed in the hole at a depth of 4 feet 2 inches from the surface. The rise of the ridge, at the crown, was 15 inches above the level of the surface of the furrows, so that the level of the water, at the half way between the drains, was 13 inches higher than the bottom of the drains. Mr. Parkes called the attention of the council to the important phenomena elicited by this experiment and as bearing particularly on the drainage of ridged land. Mr. Arbuthnot had described the field to have been drained 2 feet 6 inches deep previously, but that it remained constantly wet, whereas it was now thoroughly dry; and the singular fact appeared that drains laid in the furrows 4 feet deep removed the stagnating water to a depth of 4 feet 2 inches below the crown of the ridge. He hoped to be able at a future period to lay before the council the result of similar tests applied to the ridges of 45 feet in breadth. Mr. Arbuthnot had furnished him with particulars of the cost of this drainage, which amounted to £18 15s. for the seven acres, or £2 13s. 7d. per acre, which would be considered very moderate, when it is known that the small pipes had cost 30s., and the 3-inch mains 40s. per 1000. Mr. Parkes would caution those who might practice deep draining, not to expect in all cases such immediate beneficial results as had occurred in this, and in many other instances where land had been long drained previously, though at shallow depths. It was well known in the Weald of Kent clays, that drains laid 3 and 4 feet deep in undrained lands, rarely produced their full effect, till after two or three seasons; yet in most cases with which he was acquainted, where deep drains had been placed in the same soil, previously shallower drained, they acted at once, and efficiently. He would again bring to the recollection of the members, the facts stated by Mr. Pusey, viz., that drains laid in some clay land of his had scarcely acted, or very imperfectly, till after the long drought of last year, when recently made drains also produced an immediate effect.

DRAUGHT ON UNEVEN GROUND.—Mr. Beaumont informed the council that having completed the model of his contrivance for the draught of carriages, or the working of ploughs on uneven ground, it might be seen by the members at Mr. Frasi's, engineer and millwright, 158, Goswell-street. The council directed information to be conveyed to Mr. Beaumont that, when his machine was completed, he would be at liberty to exhibt it at any of the country meetings of the society.

DRAUGHT BY WIND-POWER.—Mr. Fuller, M.P., laid before the council various interesting statements connected with the experiments of his tenant, Mr. Stace, residing at Berwick, near Lewes, in Sussex, in the application of the power of windmills to the general purposes of agricultural draught, especially in the operation of ploughing. Mr. Stace remarks, "We have ploughed, and ploughed well, several acres of land whilst making our experiments—that w ploughed several acres—and that we n Pearson's draining-plough—are o convince us of the utility of the for the advantages of being able to d at some seasons, without treading ses, are so great, that it would be g at even a greater expense; but we ve, plough by wind at less than half of horses.

Reviews, &c.

ers' Medical Dictionary, for the of Animals. By Cuthbert W. , Esq., F.R.S. J. Ridgway,

IBERT JOHNSON has compiled a l little work, to which we wish ess. Compilations of this kind aluable where the aid of a well- eterinarian is not to be had; but a farmer is in reach of a regular r we would have him by all not so much upon the book as nan. It requires more skill than ofessional man usually possesses he nature of diseases in their first without the power to do this he course, apply the remedies here him.

e the following extracts, on and "*Hoove*," as specimens of and which will give our readers of the value of it:—

" says Professor Youatt, "is the ligence and mismanagement. It is our cavalry, and it will be the fault eman and farmer if it is not speedily m every stable."

onsists of an inflammation of the horse, and it most generally attacks s; and during the attack a complete put to the development of the greasy ch exudes on the surface of the skin

It arises from the sudden transi- mperature to which the heel of the l legs are more peculiarly exposed urrents *of air in warm stables*, the n *of dirt, the too deeply* bedding in straw; the stable door, when open, produces of course a cold current of air, which is nearest to the hind legs. The causes then of grease in horses are rapid transitions in temperature, high feeding, with irregular exercise, filthy stables, washing the legs when heated, and leaving them to dry, without sufficiently sponging and rubbing them, the washing when heated in ponds, or the pouring of water over them.

Well wash the heel with soft soap and water, and afterwards apply the following ointment:—

Ointment for Scurfy Heels,

Yellow wax, 2 ounces,
Sweet oil, 8 ounces, melt together and add
Sugar of lead in very fine powder, 2 drachms.

Use a little of this after each bathing. The horse to have bran mashes, and a diuretic ball every third or fourth day, at the same time having green food if possible. If not attended to, the inflammation extends and the heel cracks. Poultice the heel with carrots boiled soft; if they cannot be obtained, one made with linseed meal. Apply the following caustic wash:—

Blue stone, 2 drachms,
Alum, 2 drachms,
Water, 1 pint.

When the inflammation has subsided, we may leave off the poultice and apply the following ointment:—

Yellow resin, 4 ounces,
" wax, 4 ounces,
Sweet oil, 2 pints, melt them together and add
Calamine in very fine powder, ½ pound; stir till cold.

HOOVE—Is a disease in cattle, caused by the fermentation of green food, which, evolving a great quantity of gas, distends the rumen. It is a common complaint in those cattle and sheep, who, taken from very poor food, are turned into clover, turnips, or rich pastures.

In Cattle.—The animal ceases to eat, becomes distressed, its breath is oppressed, it moans; the belly is blown up; the brain is next effected; the tongue protrudes; the animal falls and, after some struggling, dies.

There are two common modes of treating the animal suffering with the hoove, which are commonly and successfully followed.

The first is, by piercing the left flank of the animal with a knife. Through the aperture immediately rushes the gas, with considerable violence, carrying with it some of the food and other matters. Professor Youatt observes, with regard to the safest place of performing this operation,—Supposing a line to be drawn close along the vertebræ, from the haunch-bone to the last rib, and two other lines, of equal length, to extend down the flank, so as to form an equilateral triangle, the apex of the triangle, or the point where the lines would meet, would be the proper place for the operation." In this operation, it is by far the best to use a trocar, which is an instrument consisting of a stillett or knife, encased in a silver tube or canula. In using this, after the piercing is effected, the stillett is withdrawn, leaving the pipe sticking in the aperture, where it may be secured by means of a ring, which is fixed on the end protruding from the wound, and by a cord round the animal's body. By this means the discharge through the aperture is properly directed in its course, some portion of which might otherwise escape (as it usually does by the old mode) into the abdomen. In a day or two, the affection being cured, the carnula may be withdrawn.

The other mode of relieving cattle suffering with the Hoove is, to introduce an elastic pipe, or probang, down their throats into the stomach, by which means the gas is immediately liberated, and the animal relieved. There are several varieties of this implement made by various instrument-makers, which I commend to my readers. This may be introduced into the stomach of the animal as often as the belly swells.

When the animal is quite relieved, a dose of physic should be administered. This may consist of—

Epsom salts, 1 lb.
Carraway seeds, 2 oz.
Ginger, ½ oz.
Gruel, 3 pints.

And then, to impart tone to the stomach, for *three* or *four* mornings give a dose—

Epsom salts, 4 oz.
Gentian, in powder, 1 oz.
Ginger powder, ½ oz.
Carraway, in powder, 1 oz.
Gruel, 3 pints.

Calves—Have the Hoven occasionally. The remedy: introduce the probang.

Sheep—When first turned into rich green food, are, like cattle, apt to eat voraciously; the stomach becomes overloaded; fermentation takes place; the belly becomes distended; and the animal, if not relieved, speedily dies. For this disease there is, perhaps, no mode so practically available by the shepherd as the trocar, to which I have already alluded when speaking of this disease in cattle. A probang for sheep is also constructed, and is a far better mode of cure than the use of the knife, or a trocar. This is passed down the animal's throat much in the same way as in the case of cattle.

The after-treatment is, to give the animal a dose of physic, say—

2 oz. Epsom Salts,
1 drachm Powdered Ginger,
2 drachms Carraway,
In ¼ pint of warm water.

Avoid turning it into pasture too luxuriant.

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Report of the Doncaster Agricultural Association on the advantages of Mangel Wurtzel as a Fallow crop. London, J. Ridgway.

If every society in the kingdom took the same means of collecting and disseminating information upon points of practical husbandry, as the above-mentioned society has done, their value would be increased in a vastly extended ratio.

We notice the report before us as evidence of the great practical utility of what we recommend. The following is the method adopted by the committee to carry out its views, and to obtain the information upon which this and similar reports are founded:—

The committtee at their first meeting prepared a list of queries to be submitted to the farmers, with a view of eliciting the necessary information.

ey also laid out into districts the extent of
ry over which their inquiries were to run,
these districts were allotted among the
ers of the committee; each member un-
k to send the enquiries, and as far as pos-
procure returns from the farmers within
istrict, and was considered at liberty to
them as much further as he pleased.

e report before us is founded upon
unications from the following gentle-
and farmers of the district:—

Lord Viscount Althorp, Wiseton Park,
awtry. 2. Mr. Birks, Rossington Grange,
oncaster. 3. Mr. Bloomfield, Warham,
Walsingham, Norfolk. 4. Mr. Blythe,
lk. 5. Mr. Born, Streethorpe, near Don-
6. Mr. Bulling. 7. Mr. Cross, Gring-
ear Bawtry. 8. Mr. Gibbons. 9. Mr.
e Kelk, Sutton, near Retford. 10. Mr.
ng, Shooter's Hill, near Doncaster. 11.
oore, Warham, near Walsingham, Nor-
12. Mr. Paley, Squire Pastures, near
13. Mr. Kelsey Park. 14. Mr.
s, Horsforth Hall, near Leeds. 15.
John Simpson, Babworth, near Retford.
r. Snowden, Marr, near Doncaster. 17.
arwick, Eaton, near Retford. 18. C. C.
rn, Esq. M.P. Felix Hall, Essex. 19.
odf. Wright, Bilham, near Doncaster.

ould be difficult to do justice to the
before us by any extract from it, we
ore give it entire, or nearly so—first
ing that the very able writer to whom
ociety is indebted for the admirably
nsed form in which the information
en, errs in calling Mangold Wurtzel
op of very recent introduction into
ountry"—upwards of twenty-five years
was grown in this county (Cheshire);
a limited scale it is true, but still we
emember, when the extensive farm-
operations, amidst which we were
ht up, had but few charms for us who
longed for the pleasures of society,
a city life; we well remember, that
old Wurtzel was grown and fed to
s, pigs, and cattle. Horses, it was
found, preferred Swedish turnips, but pigs raced each other round their fold-yard for the large juicy red roots:—

The subject which the committee have selected for their second report, is one respecting a fallow crop of very recent introduction into this country, viz. Mangel Wurtzel; consequently, the answers to their queries are not so numerous as they could have desired, for the purpose of forming a correct judgment on the comparative value, in all respects, of Swedish Turnips and Mangel Wurtzel.

Amongst our correspondents, some of the most valuable are from Norfolk, where two appear to have grown Mangel Wurtzel for ten or twelve years. Of the others who have favoured us with their answers, seven or eight have used it for above five years; but the greatest part have only begun to use it within the last year or two. The answers are from every description of soil, the greatest number (nine) from sand, not, it appears, because that kind of soil is most favourable to it, but because on sand land fallow crops, of all sorts, are more generally grown than on any others; six are from peat, four from clay, four from chalk, or limestone.

The method of sowing appears to be drilling, or dibbling on ridges, from 27 to 30 inches apart, and afterwards singling out the plants in the rows, at about 16 or 18 inches distant from each other; the period of sowing, any time between the middle of April and end of May; on cold soils, earlier than on warm.

The root is taken up in October or November, and stored, or pied, like potatoes, being covered with about one foot of straw, and afterwards with a few inches of mould; but care must be taken not to lay the mould on till the plants are quite dry, as they would otherwise be liable to heat and rot. The tops and leaves should be ploughed into the land immediately. In comparing the quantity of manure used for Swedish Turnips and Mangel Wurtzel, it appears, from the answers of those farmers who have tried Mangel Wurtzel longest, that both require nearly an equal quantity, or if anything, the proportion for the Swedes is rather the largest, though, at the same time, some lay on more for Mangel Wurtzel, especially if the Swedes are to be eat on the ground. The quantity may be stated as from 10 to 12 three-horse cart-loads per acre. With respect to the comparative produce of the two crops, it appears to be in favour of Mangel Wurtzel, in the proportion of about one-fifth. The greatest weight obtained is by Mr. Simpson, of Babworth—54 tons. Of our correspondents, ten decidedly prefer Mangel Wurtzel; two give a partial preference to Swedes; and the rest have not expressed any opinion.

With respect to the succeeding crop of corn, six give it as their opinion that Mangel Wurtzel is detrimental, and two state the proportion of deficiency to be one-fifth; eight describe it as not injurious; and the rest have not made any statement on the subject.

The feeding properties of Mangel Wurtzel and Swedes are an important part of our investigation; Lord Althorp alone has fully tried their comparative merits: he writes thus,—"I tried an experiment, by feeding two oxen abundantly on Swedish Turnips and Mangel Wurtzel, and the result was, that they increased in weight each of them, when upon Mangel Wurtzel, much more rapidly than when upon Swedish Turnips, in proportion to the weight which they consumed. I next year tried the same sort of experiment on a single beast, and the result was similar, but rather more favourable to Mangel Wurtzel. I have heard that the giving large quantities of Mangel Wurtzel to beasts in very low condition has been found very dangerous; but I have never found any bad effects from the use of it with either cattle or sheep. It sometimes happens, that when the oxen are first put to Mangel Wurtzel, after coming from the pastures, it disagrees with one or two individuals; in this case, I cease giving it to these for a few days, and when put to it again, it has always agreed with them very well." In this opinion his Lordship is supported by Mr. Kelk, of Sutton; but seven of our correspondents are of opinion that Swedish Turnips will feed quicker.

With respect to milch cows, the answers are *few*, and still more doubtful than on feeding; many of our correspondents state that they give it to their cows; five of them speak of it as producing more, and sweeter milk; but two of the Norfolk farmers say it is apt to injure the butter.

Having gone through all the points mentioned in the queries, the committee consider that on the whole the answers are most satisfactory in favour of an increased culture of mangel wurtzel; for, in the first place, the Norfolk farmers, who have used it longest, and on soils where the turnip is most likely to compete with it, still grow it in so large a proportion as from one fourth to one half of their yearly fallows, and at the same time express an opinion that it is on stronger soil than theirs that it will be the most useful.

In giving their opinion in favour of mangel wurtzel, the committee by no means lose sight of the value of other fallow crops; but considering that there must be in every farm some land not kind to turnips—that, with the same quantity of manure, a larger bulk of produce can be grown—and that for all land a change of fallow crop is desirable they strongly recommend the introduction of it into every arable farm in the country.

To sum up—the advantages of mangel wurtzel are these:—

It is more sure to plant—being very little liable to the fly, or grub.

It will produce more weight.

It is off the land earlier.

It is useful as a change of fallow crop when the land is tired of turnips.

It will grow on land where turnips cannot be raised.

It is better Spring food.

On the other hand, in favour of Swedish turnips, it may be said.

That the weeding and singling out are less expensive.

There is rather more time for fallowing in the spring.

The succeeding crop is better than after mangel wurtzel.

Perhaps cattle feed best on Swedish turnips when they are used alone.

It must, however, be remarked, that these last evidences in favour of Swedish turnips not fully proved, and only partially sup- ted.

In conclusion, perhaps two observations may of use.

First, That the very early season at which agel wurtzel should be sown, renders it hly expedient that the land should be made clean as possible in the autumn, so that a days in the Spring may be sufficient to get it a proper state for the reception of the seed.

Secondly, That wet seasons do not suit ngel wurtzel so well as dry; and conse- ntly for the last two years the Swedish nips have been the more valuable crop of two.

◆

mestic Cattle: portraits of the principal reeds reared in Great Britain and Ireland; with characteristic descriptions of their pe- uliarities and comparative merits. Parts & 2. By William Maggillivray, A.M., L.D. William Blackwood and Sons, Edinburgh and London; David Wyllie nd Son, Aberdeen.

Maggillivray has proposed for him- a most interesting as well as important t, and one for which he appears emi- tly qualified. In the parts before us he presented us with a short notice of the ividual members of the general bovine ily, as introductory to a more extended l complete account of the various breeds domestic cattle than any we are yet sessed of. The work is splendidly got but this is no more than is very natu- ly to be expected from the great emi- nce of the publishers; and it is to be bellished with *portraits* of various well- own animals as specimens of the several eeds. This, if due care be taken by the tists, is a very superior mode of embel- hing a work of this kind, for we are not ly presented by this means with a pic- rial representation of the particular breed ught under our notice by the learned r., but his description is exemplified by the likeness of an animal we, many of us, may have seen, and which all must know by reputation. A word, however, to the artists may possibly not be out of place here: we would strongly advise them to adhere strictly to the portraiture of *the particular animal* intended to serve as a model for the Dr.'s disquisition, and by no means to allow their attention to be distracted by other and inferior objects; thus in the picture of Mr. Duff's short-horned cow, (part 2) a recumbent animal is also given which is intended for her calf; to be a portrait of the calf it should be represented in a standing position; no artist can paint the likeness of an animal, descriptive of its genera, as this is given: the calf should, therefore, in our opinion, either have been omitted altogether, or, if it was necessary to the illustration of the text that the representation of a calf of the short-horned breed should be given, that it should be what it purports to be—a "portrait" of the particular animal.

Each portrait of the series is to be described at length, with critical remarks upon the animal represented; thus in the case of Mr. Boswell's bull "Billy," No. 3151 Coates' Herd Book, figured in part 1, we have the following:—

Calved 12th January, 1837; bred at Ury, Kincardineshire, by Captain Barclay of Ury. Got by Captain Barclay's Monarch (4495); dam Red-ears by Invalid (4076); grand-dam Flora, by Columella (904); great-grand-dam by Albion (14); gr. gr. g. d. by Mr. Seaton's white bull (579); gr. gr. gr. g. d. Bonny Lass by Palmflower (480); gr. gr. gr. gr. g. d. Coates's Beauty, by Patriot (486); gr. gr. gr. gr. gr. g. d. Young Hart, by Haughton (294); gr. gr. gr. gr. gr. gr. g. d. Hart, by a Bull of Mr. Cornfath's.

DIMENSIONS.

	Ft.	In.
1. From crown of head to top of shoulder	3	0
2. From top of shoulder to a point on the back in a line between the hookbones	3	2
3. From that point to tail-head	1	11
4. Total length, from crown of head to tail-head	8	1

		Ft.	in.
5.	Length of tail, exclusive of tuft	2	7
6.	Length of face, from crown of head to point of nose	1	11
7.	From a point in a line between the eyes to point of nose	1	2
8.	Length of ear	0	8
9.	Breadth of head between the ears	1	1
10.	Breadth of face in a line across the eyes	0	10
11.	Breadth across the hook-bones	2	4
12.	Breadth across the shoulders	1	4
13.	Girth of muzzle	1	11
14.	Girth of neck at onset of head	4	0
15.	Girth behind the shoulders	8	4
16.	Height from ground to fore elbow	1	3
17.	From fore elbow to top of shoulders	3	10
18.	Height of back at hooks from ground	4	11
19.	Height of hind hock from ground	1	8
20.	Depth from hook-bone to bottom of flank	2	5
21.	Depth between bottom of brisket and fore knee	0	3
22.	Distance between the two hind feet when standing	0	10
23.	Between the two fore feet ditto	1	0
24.	Girth of bone below the knee	0	9
25.	Girth before the hooks	8	6
26.	Length from point of shoulder to hip	5	11
27.	Length of quarter, diagonally, from hook-bone to hip-point	2	2
28.	Girth of shank	1	10
29.	Girth of forearm	1	8
30.	Height from ground to bottom of flank	2	3
31.	From ground to bottom of dewlap	1	6

QUALITIES.

Live weight, 25 cwt.; colour of hair light roan, nose rich yellow, hoofs bright brown; bone small and fine; eyes prominent and remarkably mild; expression of countenance pleasant; gait graceful, standing particularly straight on all his legs; very active, lively, and well tempered; handling mellow; coat full and soft. His girth behind the shoulders (8 feet 4 inches) is remarkable. Brisket large and fine.

HISTORY.

"Billy" was bought a calf, at the Ury Sale, in 1837, by John Hutchison, Esq., Monyruy, Peterhead. He carried off all the prizes with him at the local shows till 1840, when Mr. Hutchison entered him for competition at the Highland Society's Show at Aberdeen. Here the four judges were divided, two being for "General *Picton,*" the property of the Duke of Buccleugh, and two for "Billy." After two hours' dispute, they agreed to decide by lot, when "General Picton's" admirers gained the day, and the first premium was given to him: Mr. James Chrisp of Doddington, and Mr. Herriot of Ladykirk, two of the judges, putting it on record that they considered "Billy" the best bull, although, by the result of the above decision, the second premium only was given to him. He was then sold to J. Irvine Boswell, Esq., of Balmuto and Kingcausie, for one hundred sovereigns.

The good points of this bull are, what breeders call, his fine quality, his shortness of leg, and his great girth behind the shoulder-blades. In temper, his owner describes him as being unrivalled, never requiring a ring, and as qui and docile in a crowded show-yard as at home in the field or farm-court. In proof of his activity, it may be mentioned that he has, at the age of seven years, frequently jumped over five-bar gate. He has a great propensity fatten, which can only be checked by low and spare diet. His food has been grass in summer, straw and a few turnips in winter. His stock are considered fine, particularly the crosses from Aberdeenshire cows.

His defects are not numerous. At the of the tail, where it joins the back-bone, it is high for the acknowledged standard of beauty, and his hind quarters are not so heavy as they ought to be in an animal so fine forward.

From what we can see of the intentio of the spirited proprietors of the work, the parts before us, we feel justified recommending this splendid publication our readers.

Miscellaneous.

Webster's Tile Machine.—We unde stand that the tiles manufacted by thi machine are used in draining the estate her Majesty, at Osborne, Isle of Wig under the direction of the patentee.

Crosskill's Patent Roller.—At the Great Union Meeting in Scotland, held Kelso, on April 1st, Mr. Crosskill awarded the first prize for his patent rolle

PERFECTION IN FARMING.

ıing my friends you would hope to
ed,
of old customs let your mind first be

xcellent maxims fail not to attend,
contain all the pith the skill'd ever
d.
drain well your land or your land
rain you,
depend on it there's no maxims more

ıch acre of land you'd reap a large

he mother of money" so lay it on
;
l is a thief and should be banish'd
nd,
the whole breed then by hoe or by

ot doth bore downwards in search of
d,
you'll find will effect a great good;
ən my friends to the maxims I've
n,
you will find that *perfection* you've
.

R.

ss, near Manchester,
2d June, 1845.

ɜ growing at Haggerstone Castle, ' Lady Massey Stanley, a splendid : Eugenia malaccensis, 20 feet in ıd 12 ft. through, with branches ıching the ground. It is now in ɔm — covered with bright daz- let flowers, and beautiful green e leaves measuring from 10 inches ngth, and 6 inches over; the tree forms a magnificent appearance.
, 1845.

. at present in the pleasure grounds ıugh Castle a most magnificent of Rhododendron Maximum, asures 48 yards in circumference ɛt in height, and is covered with ırdinary number of four thousand dred blossoms.

ГILES.—Within the last few days ıovel importation has been made ırt of London. This is a small of glass tiles, similar in point of form to the common clay tile for roofing buildings, the advantages held out being their lightness and pervious to the rays of the sun. The latter quality is presumed to render them suitable for the roofs of greenhouses, as they will not interrupt the heat and light, whilst they are sufficiently strong to resist the effects of hailstorms, which will much reduce the cost of insurance on greenhouses. The importation is made from Antwerp, and they are chargeable with a duty of 14s. per cwt. under the present tariff. They have the appearance of the common green glass, and if the experiment is found to succeed it demands the immediate attention of our home manufacturers.

SCOURS IN SHEEP.—This malady is one of the worst complaints that attack the flock; as soon as discovered, the diseased animals should be removed from the flock; and kept fasting at least twenty-four hours without any food. Then commence by feeding them in small quantities on ripe hay; coarse timothy is as good as any; keep them up on ripe hay until you are satisfied the disease has abated. This is the most simple and surest method I ever tried. Fresh feed, grass or hay, may cause this complaint, and when thoroughly commenced among the flock it may spread by contagion; therefore a shift of place and feed is obviously necessary. If the hay be brined once or twice each week through the foddering season, say, dissolve one pint of salt in three gallons of water, for a flock of fifty, it will prevent the scours, and is one of the best methods of winter management, if fed in mild weather, that can be recommended for sheep.

DISCOVERY OF A DEPOSIT OF GUANO, AT ST. LAWRENCE ISLAND, NEW SOUTH WALES.—The Governor of South Australia has despatched to the Colonial-office an account of the discovery of a considerable deposit of guano on the island above-named, in lat. 38 23 S., lon. 141 35 E., immediately off Cape Nelson, and within the territory of New South Wales. This deposit is represented as being less rich than that in South America, but accounted for from the sample having been taken from the surface. Lord Stanley, in notifying the fact, wishes it to be clearly understood, that it is not in his power to guarantee to any shipowners who may engage in the removal and conveyance of the guano in question an exemption from such charges as the local governments of the British settlements in New Holland may see fit to impose on the removal of that article.

Extraordinary Importation of Cattle.—Four hundred and thirty-three head of neat cattle have been landed at this port —viz., 92 by the Hanseatic steamer Hamburgh; 78 by the Transit; 64 by the Queen of Scotland; 43 by the Leeds, all from Hamburgh; and 46 by the Emerald Isle, from Rotterdam, besides a few calves and one fat sheep. From Scotland the numbers have been 51, including 10 Orkney heifers, by the Martello, and 18 by the Glenalbyn, from Leith.—*Hull Packet.*

Waste of Straw in Thatching.—It would be impossible, after having entered so generally into all the various details connected with homesteads, to omit one most important consideration respecting them; I allude to the habit, too often in use, of thatching buildings. This cannot be too generally reprehended. The arguments against it are endless; it entails a continual expense, robs the land, creates danger from fire, is a harbour for vermin. Either of these objections is a sufficient reason for stopping this monstrous practice. If landlords reflect upon this, they will see that they insure an injury to their land by compelling their tenants to repair with straw; whereas tiles or slates are preferable in every way. It is only the first outlay which is to be considered; by adopting which, robbery to the land and unceasing expense to the tenant are prevented. In the buildings lately pulled down at Peckham, there must have been nearly an acre of thatch, and they harboured vermin sufficient to stock a whole country. The
instances in the Weald of Kent,
nearly the whole straw of the tenant
for his house and buildings, a fact la
ble in every view of the question. I
is to be taken from the land, let it
and the money laid out in artificial n
but it is most desirable that it m
cease to be used for such improp
poses.—*Lord Torrington.*

Improved Method of Making
—N. J. Wyeth, Cambridge, Massac
—The object of this composition is,
duce bricks which will admit of
nails into them, to avoid the nec
introducing in walls what are
amongst mechanics as "wooden
This composition consists of clay
with either sawdust, charcoal, peat
bark, after it has been used by th
The proportions may be varied,
patentee recommends three part
to five parts of either of the com
above-mentioned.

A Light of other Days.—In t
bourhood of Poynton resides a
whose wife, in the notability of
racter, exceeds perhaps that of a
we have ever heard of. Her duty,
of other farmers' wives, have be
her marriage, to mend the stockin
whole household; but her fru
taking care of the waste ends
have exceeded the thriftiness of
them, for during the performanc
operation, she has singularly
every end cut from the stockings,
has collected as many ends as ha
pillow case, not one of which is lon
the needle she mended the stockin

A new system of electrical teleg
which the dispatch is written with
the mere action of the fluid, wa
Brussels, in the presence of the m
public works, on Monday week.
periment is stated to have been
successful.

COME, &c., OF THE UNITED KINGDOM. om returns issued on the 23rd ult., rder of the House of Lords, it appears the public income, after deducting backs and repayments in 1842, was 244,334; in 1843, £56,945,043; and in , £58,459,751. The expenditure in same three years was, respectively, 223,874; £55,501,740; and £55,103,645. taxes repealed, expired, or reduced, in , amounted to £2,466,697, nett; in , £411,521; and in 1844, £458,810. taxes imposed in the same period unted to £5,721,585 nett, in 1842 (being Property and Income Tax.)

ie total number of letters sent through post-office, in the year 1844, was 242 ons, being an increase of 22 millions ie previous year.

AIDS AND WIVES.—In his comedy of me works Wonders," Douglas Jerrold —"Women are all alike. When they're ls, they're mild as milk. Once make wives, and they lean their backs nst their marriage certificates and defy "

OMFREY AS FOOD FOR CATTLE.—As an cultural plant, "the Prickly Comfrey first brought into notice by D. Grant, rseryman at Lewisham, and tried by a ber of cultivators. Cattle of every are said to be fond of it; and Mr. it thinks an acre might be made to uce thirty tons of green fodder in one . The plant is of easy propagation by s or roots; it is also of great durability, if once established would probably inue to produce crops for many years; in that point of view it would seem to valuable plant for the cottager who s a cow." Farther experience tends rove that cattle become fond of this t, if not permitted to grow until the es and stalks get too hard, although may refuse it at first. Its great quan- of produce, as stated above, does not n overrated; and with regard to its ation what has been there anticipated orrect. The best mode of propagating eems to be by dividing the roots, and ating them in a good deep soil, in rows feet apart and at least fifteen inches ween the plants. Seeds seldom ripen in ntity, and seedling plants are long in ving at maturity.—*Lawson's Agricultu- Manual.*

EFFECT OF DRAINING ON TEMPERATURE. have mentioned, in describing the ground- the effect of a little warm stream brought a deep drain into Scandalegill, promoting the formation of this ice. Is not this effect interesting and worthy of attention, as tending to illustrate how draining, at the same time that it increases the fertility of land, promotes its warmth, and that of the incumbent air, and its dryness, warming too the river which it feeds, and that in a graduated manner, as from a reservoir? I may add a few thermometrical observations in confirmation. On the 14th of March, when little stream mentioned was 42°, another flowing from an ill-drained field, partly marshy, was 35°; and while the marshy part of this field was frozen, the dry grass of its roots, in the well drained field, was 35°; the air at the time being 33°. And besides the cold occasioned by a surface of ice, it should be remembered that even after the ice has disappeared, the stagnant water, in the act of evaporating, will have on the ground, and on the atmosphere, a cooling influence.—*Dr. John Davy, in the Edinburgh New Phil. Jour.*

DRAINAGE AND IMPROVEMENT OF WASTE LAND.

THE remarks which appeared in our columns, two months ago, upon the subject of joint stock companies for the purpose of effecting these important objects have given rise to the following, which seems to us to put the matter in so forcible and feasible a light that we shall not be at all surprised to see many such companies established in various parts of the country.

To landowners and capitalists on the mode of working joint stock companies for the drainage, inclosure, and improvemement of waste lands.

IT is almost needless now to point out to LANDOWNERS the value of draining, or of the inclosure of common lands, or of wastes which may be at present either totally or comparatively unproductive. Much public attention, however, is directed to these improvements, the government having two bills now before parliament, the objects of which are to facilitate these important agricultural operations; but it is feared full advantage will not be taken of the powers proposed to be conferred upon landowners unless the means be at the same time offered them, out of the superabundant capital of the country, to effect the improvements contemplated in an efficient manner, and at a reasonable cost. That these means can be rendered more readily, as well as more reasonably, available through the instrumentality of a joint stock company than through the medium of private loans is clear, for, in the latter case, the loan must be in one sum, (at least it must be so repaid); it is expensively raised, and, in the application of it, a series of concurrent expences are unavoidable, which will fall more heavily upon individuals, each operating upon a limited scale, than upon a company which shall undertake to execute works for extensive districts. A company too will be able to offer a diminished expense in the raising and securing its loans, which will be charged to the landowners only as the works to be executed are accomplished, and, *which may be repaid by instalments.* A company would also undertake all the surveys and other requisite steps for enabling full advantage to be taken of the powers conferred by the bills now in parliament, and which steps are necessary and preliminary, and would be very expensive to individuals, whilst to a company they would, from its more extended operations, be much less so.

To the Capitalist the proposition is at the present day comparatively a new one, for although warping and drainage companies, and companies for reclaiming land from the sea and from our great rivers have existed for many years, yet what has been done recently in the way proposed has been the result of private enterprize; the shareholder in the proposed company will therefore naturally enquire, whence the income of the company is to be derived and what amount per cent. upon the paid-up capital may be expected. These very natural enquiries cannot be so satisfactorily answered as by a short statement of the mode in which the affairs of the proposed company would be worked. Let us take then, for example, a tract of inclosed land which may be the property of three, four, or more proprietors, and the whole of which
requires draining—some parts of it h
more so than others. Upon a su
the engineer to the company, an
measurement, it is found that give
tities of certain lands of each or o
more of the proprietors require th
of a certain sum per acre, whilst
maining lands of each can be ef
drained for a certain less sum per
is also found that to execute th
work a certain length of drains c
of mains and branches will requ
cut at certain depths, and into
certain number of tiles and soles,
must be placed; the cost of thes
tions are then subjected to a strict
tion, regard being had to the natu
soil—the cost of making and bu
tiles—and the price of labour. A
proposal is then made to the com
a form to be provided by the com
that purpose,) signed by the prop
a majority of them, to pay for the
works a sum per acre, to be name
is then accepted or not by the dir
as they may find it prudent for the
of the company; if accepted, the
undertakes all that is necessary u
contemplated acts of parliament,
cepts mortgages from such of t
owners as may require any ad
money for the contemplated impro
in which it shall be stipulated that
advanced may be repaid by inst
with interest after the rate of fro
per cent. per annum; the propo
which the several proprietors sha
bute to the cost of the works bein
tained as is directed by the acts o
ment referred to.

The *profit* of the company (as
guished from interest) will then
depend upon the prices for which t
work can be executed, and the ch
with which the tiles for forming th
can be manufactured; and upon the
it may be sufficient to state that the
trade profit upon the manufacture

of 50 per cent. The company,
making very large quantities, and
ıg the usual trade risks, will be
luce this item of profit very con-
and still afford to the shareholders
return for the money invested.
lands proposed to be drained
uninclosed, and should require
as well as draining, or if the work
formed be the usual meadow
for flood waters with irrigation,
edings will be the same as in the
se, the further profit depending
on the correctness with which
f the operations shall have been
. In all cases, a very trifling
profit will, from the extent to
operations of the company will
, afford a very liberal return per
the outlay.

ıe above statement it will be ap-
ıt the calls from the shareholders
eriodical, and made only as the
required for immediate invest-
n it will be secured by mortgage,
ed by the company by way of
not so advanced, it will, under the
of the act of parliament, be re-
by the valuer who apportions it
he parties benefitted by the out-
will be no costly establishment
n—the works will be executed in
ner as to afford a direct check
expenditure—the affairs of the
being submitted to the share-
lf yearly or oftener if necessary.

The Markets.

*ther has not yet had much serious
the* WHEAT *crops: it is true, that
ey are heavy, particularly upon cold
although well thorough-drained, rust
s appearance, at least, such complaints
m many quarters. Some instances of
we fallen under our own personal ob-
he fields looking "as red as a fox:"
eve the injury is but light.*

*ket for this article is very languid,
ıg with much caution, whilst sellers
are not at all anxious to force their produce upon the market. Our quotations, therefore, are the same as last month.*

OATS *are still quoted high, with every apparent chance of their continuing so.*

BEANS, *English, are brought up in small quantities, and maintain their value, which has given a turn in favour of Egyptian.*

BEEF *and* MUTTON *continue to obtain fair prices, although the weather is against any very extensive purchases.*

WOOLS *are well sold; the demand continues good, and stocks on hand are reported to be light.*

LONDON, June 23.	Per	Qr.
WHEAT, Essex and Kent, new, red	50	53
White	53	56
White, old	56	—
RYE, old	32	34
New	36	—
BARLEY, Grinding	22	28
Malting	30	32
Chevalier	33	—
Irish	24	26
Bere	25	—
MALT, Suffolk and Norfolk	58	63
Brown	56	60
Kingston and Ware	60	—
Chevalier	65	—
OATS, Yorksh. & Lincolnsh., feed	23	24
Potatoe	24	26
Youghall and Cork black	22	—
Cork, white	23	—
Dublin	22	23
Black	22	—
Scotch feed	24	26
Potatoe	25	28
Limerick	23	25
BEANS, Tick, new	38	40
Old, small	40	42
PEAS, Grey	38	40
Maple	38	40
White	38	40
Boilers	38	40

SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Linseed, Baltic..38 44 Odessa..45
Mustard, White......12 15
Brown ....10 12 per bush.
FLOUR, Town-made 42 —
Suffolk.... 34 35 per sk. of 280 ℔s.
Stockton and Norfolk 34 35

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	40	—
Hamburgh	32	34
Rostock	33	36
BARLEY	19	23
OATS, Brew	17	18
Feed	14	17
BEANS —	24	29

Peas	28	32
Flour, American, per barrel	19	—
Baltic	18	—

LONDON AVERAGES.

Wheat	4366 qrs.	£2	11	8
Barley	246	1	9	6
Oats	12073	1	3	0
Beans	598	1	17	10
Peas	173	1	16	11
Rye	22	1	11	3

SEED MARKET.

	s.		s.
Canary, per qr.	44	to	50
Carraway, per cwt.	44	to	48
Clover, red, English	45	to	50
„ „ Foreign	40	to	48
„ white, English	60	to	62
„ „ Foreign	50	to	62
Coriander	12	to	18
Hempseed, per last	35	to	36
Linseed Cakes, Eng. p. 1000	£11	to	£11. 10s.
„ „ Foreign, p. ton	£7 10s.	to	£9
Mustard, white, per bushel	10	to	14
„ superfine „	12	to	16
„ brown „	12	to	16
Rapeseed, English, per last	£26	to	30
Tares, English, spring p. bushel	4s 0d	to	6
Foreign „ „ „	3s	to	5

LIVERPOOL, June 24.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℔ 70lbs.	7	0	7	6
Ditto, red	6	9	7	0
Irish white, new	6	6	7	0
Egyptian	5	9	6	0
Oats, Eng. mealing, ℔ 45lbs.	3	0	3	9
Irish	2	11	3	0
Welsh	2	9	2	10
Barley, Eng. malting ℔ imp. qr.	28	0	30	0
Grinding	0	0	0	0
Irish and Scotch	4	0	4	6
Rye, per imp. qr.	32	0	34	0
Beans, English, per imp. qr.	36	0	40	0
Irish and Scotch	34	0	38	0
Foreign	38	0	40	0
Egyptian, per 480lbs.	34	0	35	0
Peas, English, per imp. qr.	38	0	40	0
Foreign	37	0	38	0
Canadian	35	0	36	0
Malt, per imp. qr., fine	60	0	62	0
Flour, English, per 280lbs.	36	0	39	0
Irish	34	0	38	0
Foreign, duty-paid, per 190lbs., U.S.	27	0	29	0
Canadian	27	0	28	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	24	6	25	0
Irish	23	6	24	9
Indian Corn per 480lbs.	21	0	24	0

PRICE OF AGRICULTURAL PR

LIVERPOOL, June 24.

Hay, best p.st.	1s	0d	*Potatoes.*
Clover ditto	0	0	Short tops
Green ditto	0	2½	Red apple
Vetches	0	2	Cups
Straw.			Cattle
Wheat	0	5½	Turnips pr t
Oat	0	6½	Carrots
Barley	0	7	Manure

Cattle Markets.

LONDON, SMITHFIEL

June 23, 1845.

	℔ st
	s.
Inferior coarse beasts	3
Second quality do.	3
Prime large Oxen	4
Prime Scots, &c.	4
Coarse and inferior Sheep	3
Second quality do.	3
Prime coarse woolled do	4
Prime Southdown do	4
Large coarse calves	4
Prime small do	4
Large Hogs	3
Neat small Porkers	3

LIVERPOOL, June 23.

	s.	
Beef, per ℔.	0	6
Mutton	0	6
Lamb	0	6

MANURES.

Subjoined are the prices of severa of manure:—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. p
Guano, 10s. to 12s. per cwt., acc quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. landed and housed, 38s. to 42s.
Nitrate of Soda, 16s. 0d. (duty pd.)
Nitrate Potash (saltpetre) 26s. per cw
Preparation for Turnip Fly 10s. 6d. p sufficient for three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 6s. per cwt.
Compost, £3. 12s. 6d. per hhd. suf three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphuric Acid, 1½d. per ℔.
Sulphur for Destroying Worm on Tu per cwt.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

AUGUST—1845.

HERE are few matters at present more serving of attention than the epidemic seases of cattle. These have been so equent of late, and have prevailed so tensively throughout the whole of the nited Kingdom, that we are warranted in ain drawing the attention of our readers the subject. The following, which we py from the columns of our talented temporary the *Scottish Farmer*, presents with the particulars of a new and alarm-g complaint. Less sudden in its effects rhaps than *Pleuro Pneumonia*, it seems, wever, to be no less sure. We have eard of no cases of the kind in our own mediate vicinity, nor indeed have we therto been aware of its existence :—

“ We are sorry,” says the *Scottish Farmer*, to state that a disease of rather an alarming aracter, which, for want of a more specific rm, we shall call the CATTLE EPIDEMIC, has ade its appearance in this quarter. Some rmers consider it to be the Murrain, while hers are disposed to regard it as the much readed *Pleuro-pneumonia*, now prevailing in the uth. It is perfectly evident, however, that it neither of these,—the rapid termination and ant of putrid or eruptive appearances prove it ot to be the former, while the non-affection f the lungs and breathing distinguish it from he latter disease. This Epidemic is not disnctly understood by any of the veterinary urgeons, who hold various opinions as to the *cause*. One intelligent practitioner considers that, from the highly irritable state of the digestive organs, there must be some acrid matter in the food, and which he thinks may be produced from the cattle feeding on such plants as the *ranunculus acris*. Another attributes the disease to general causes, peculiar state of the atmosphere, &c. We have closely investigated the subject, but frankly confess ourselves unable to arrive at the proximate cause. The disease requires an elaborate pathological investigation, as it is evidently spreading its ravages over the whole kingdom. Thirty-one fatal cases have occurred in this district within our own knowledge in the course of the past month.

The symptoms and *post-mortem* appearances resemble in some degree those of the continental cattle plague *(Peste Bovine,)* which raged to a great extent in various parts of the continent a few months ago.

The animal is first attacked with looseness in the bowels, the dung being mixed with mucus: appetite as usual.

At a more advanced stage, considerable weariness and languor apparent; morbid sensibility of the abdomen and region of the stomach; coat, staring; gnashing of the teeth; suspension of the secretion of milk; cessation of the appetite and of rumination; paroxysms of accelerated breathing; violent tremors; suppression of the intestinal discharge and urine; redness and watering of the eyes; flow of mucus from the nose and foam from the mouth; excrement sometimes in the form of small black pellets.

In the last stage of the disease the excrement intolerably fœtid; sometimes bloody discharges from the bowels; general delirium; coldness of the body, followed by death. The disease generally proves fatal in thirty or forty hours, if not skilfully treated in the first stage.

Post-mortem appearances.—On laying open the abdomen, the first and third stomachs are found pretty full of food, and on the villous or rough coat of each are found red spots, indicating considerable irritation. On opening the fourth stomach it is found empty, with the exception of a small quantity of fine sand and mucus. The mucous membrane very much injected in its whole extent, and in some instances thickened by effusion,—in one case which came under our observation to so great an extent that the pyloric orifice was nearly closed. The same marks of irritation are to be found the whole length of the intestinal canal, although not to so great an extent. All the other abdominal viscera seem to be in a pretty healthy state. In a superficial examination of the brain, the vessels were found gorged with blood, and sometimes a little effusion of serum in the ventricles.

As to the treatment to be pursued, we should recommend, immediately on the purging being observed, that a little blood be taken, and laxative medicines freely administered with linseed tea. Let a skilful veterinary surgeon be called in without delay, as cures are seldom effected when the complaint has reached the second stage. The animals not affected should be removed to a different kind of pasture; or where this cannot be satisfactorily done they should be housed, and fed on old hay, with a bran-mash at night, mixed with linseed. As we before noticed, when the case has reached its second stage there is little chance of cure; but several things may be tried, as calomel and opium; cold applications to the head; counter-irritation or warm fomentations to the bowels, and emollient injections.

Before closing there is one point we wish to notice in connexion with cattle diseases generally, and that is, the immunity from pecuniary loss which the farmer may secure by availing himself of the advantages offered by cattle insurance offices. In the thirty-one fatal cases alluded to, eleven animals belonged to one farmer; seven to another; four to a third; five to a fourth; and two each to a fifth and sixth. These are serious losses, and from all we can learn, form not a tithe of the cases which have occurred within the last three weeks. In none of the above were the cattle insured, which says little for the proverbial caution of the farmers of this latitude. There are few, we believe, who have not availed themselves of the advantages offered by the insurance of their farm buildings against loss or damage by fire; and we, therefore, are somewhat surprised that, in a matter of much more vital importance—the insurance of cattle from disease, accident, and death—the advantages of the cattle insurance companies are not more generally taken advantage of."

We do not partake altogether of the surprise of our cotemporary as expressed in his last paragraph. Cattle insurance is a new thing not only to farmers, who have a proverbial dislike to novelty, but also to capitalists. The latter can hardly yet pronounce with certainty upon the accuracy of their tables, nor are the former prepared to place implicit confidence in them. To the enterprising, however, of both classes the system of assurance against loss from the deaths of cattle, by disease or accident, is a subject of interest. As we had the honour to assist in forming, and to make known through the medium of our columns the successful establishment of the first society for the purpose, (confined however, we admit, to cases of pleuro pneumonia) which was founded on the mutual principle; and as a society based upon the joint stock principle has now commenced operations, we propose to consider the best means of carrying out the intentions of both parties to these arrangements, viz., the insurers and the insured. But first, as to the principle upon which these societies are formed. Of the mutual system there can be but one

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ıe latter, being founded on the
principle, is supported by a body
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ɔle on the insurance of all de-
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ows, against death by all dis-
cidents, save pleuro pneumonia (usually called the Epidemic,) 3½d. in the £1. Including pleuro pneumonia, 6d. in the £1. Pleuro pneumonia not being taken alone.—"The Agriculturist" returns to the insured three-fourths of the price the animal would have fetched in the market *the day before death*, or three-fourths of the average value of the animal as stated in the proposal, and one-fourth the price obtained for the skin and carcase. For the rates of premium see vol. 3, No. 6, p. 90.

Whatever difference, however, there may be in the terms offered to the farmer to induce him to insure his stock, the *modus operandi* of each is pretty much the same: each, after a declaration from the farmer that his stock is free from disease, accepts a proposal for insurance as in the ordinary mode of life assurance, and each then sends an inspector to the farm, who registers and values each distinct cow or horse in the stock, distinguishing them by numbers, marks, and names. And here we think an error has been committed; for though it is true the greatest possible care should be taken to prevent fraud in the substitution of one animal for another, and thus to receive from the association on the one hand, or the company on the other, the amount payable on the death of an animal which was not insured, yet we think this mode of registering and valuing by the inspector, who again values after death, has the effect of placing the interests both of the insurers and the insured in the hands of men who may not be always competent and honest. A farmer may have his stock valued, and he may pay upon an average say of £10 per head for his cows, but when the inspector is called in to see a dead or a sick cow he may report that she is not worth £3, or on the other hand he may report that she is worth more than she really is; in one case the insurers suffer, in the other the insured. The working of the society, whether for good or evil, ought not in fact to be so completely in the power of these subordinate officers.

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This relative position of the parties immediately interested has had the consideration of our active and enterprising friend Mr. W. Palin of Stapleford Hall, the originator of the Tarvin society, and the chairman of its committee, who has urged, through the ex-secretary to the Chester Agricultural Society, upon the manager of *The Agriculturist Insurance Company* the adoption of the average system both in charging and paying the insured, in the following letter:—

"I have examined the general conditions of the Agriculturist Cattle Insurance Company, and beg to say that much as I approve of them generally, I think some of them very objectionable: as regards dairy stocks, I am of opinion that an average value should be taken, upon which the assurer should *pay*, and in case of loss *receive*, as I think it utterly impossible for any inspector to give satisfactorily the market value of a milking cow after death; therefore, for condition No. 2, I would substitute "every dairy stock proposed for insurance must be examined, and the *average value* taken by the company inspector, &c. &c. &c.," and in condition No. 11, instead of the words "he will attend and *value it*," "he will attend and take the owner's declaration and claim." The above alterations will, I think, induce many dairy farmers to insure with the above company. The case would be very different as regards feeding cattle where there is a continual change of stock and also of horses, where the value of animals vary so much; but in sheep and pigs I think the average system must be adopted, and in all cases of death, the owner should be paid upon the original value, and not the supposed value at the time of death."

To this it has been replied:—

"That by far the greater proportion of animals die during the months of March, April, and May, when they may be considered as of most value, and that consequently if the company were to adopt this plan, they would, in the course of the year, be called upon to pay more than the average value for which the stock was insured in the aggregate, and that well-fed cattle and those in good condition, are more subject to disease than those of the medium class."

In answer to which Mr. Palin observes:

"I am still of opinion that an average valuation for dairy stocks would be best, being more simple, giving less trouble to the inspectors, and also less opportunity for fraud. The average plan is simply this:—A. insures three cows, value of each respectively £12, £10, and £8, the average being £10; he pays and receives upon that amount, whichever animal he may lose: this, it appears to me, will do away with any fears about cattle dying in those months when they are of the greatest value, and likewise of those that are well fed and in high condition, because if the risk is greater the premium will be greater; and according to my experience those stocks which are well-fed are the least liable to disease."

To this observation of Mr. Palin, we beg to add that it will remove any danger of the substitution of one animal for another, at all times, in our opinion, to be carefully guarded against.

We have given this matter much consideration, because we feel that to the farmer the establishment of these institutions are of paramount importance, and because we are anxious that the promoters of them should obtain speedily that entire confidence, without which their schemes, however beneficial, will not advantage either themselves or the public.

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Tiptree Hall Farm.—As my crops at Tiptree Hall have been (like Mr. Hewett Davis's) very soundly abused, and as it is of some importance to the cause of Agricultural Improvement that the truth should be spoken, I beg to annex the following extract of a letter just received from a competent judge of the matter, which I confirm by own personal observation. Those who feel an inclination to go and see, will, I hope, do so either with or without an order, which they can obtain here at any time. Mr. Hewett Davis's crops are superb, and ill speak for themselves.—*I. J. Mechi, Leadenhall-street, London, July 23rd.*—But altogether the crops on Tiptree Hall arm, in my opinion, will equal in value ose of the same number of acres of the ry best land in this county. This is my inion, and I rejoice greatly that I can rm it; and more that my companion's me is so completely changed and im-oved."

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N THE FERTILISING PROPERTY IN BONES.

r the May number of the *Farmers' Herald* hich has found its way as far north as e shore of the Moray firth) I observe an genious paper on the fertilising principle bone manure. Having paid some atten-n to this point while experimenting with nes and other extraneous manures, a few ars ago, I would proffer a few remarks on it in the spirit of friendly interchange sentiment.

The writer of the above article, after ving a concise summary of the different ews upon the point, resolving them into e two theories, one attributing their value the animal, the other to the inorganic rt, and finding difficulties attached to ch, proceeds to give an original hypothe-s of his own, viz., that the fertilising prin-ple is totally independent of either phos-ates or gelatine. "Bones," he says, like charcoal, absorb large quantities of rbonic acid and ammonia from the atmo-here, and to this I attribute their power manure." This is both concise and tisfactory, had we any proof that it was te; but such not being vouchsafed, I e the liberty of denying the premises *toto*.

That bones, whether raw or boiled, which ve been for some time exposed to the may yield both carbonic acid and am-nia, to the ordinary tests for these sub-nces I don't deny; the carbonate of lime uld give *the one, and the decomposing tine the other: but that they* have the power of absorbing these gases from the atmosphere is quite another matter. That they yield them both, and in considerable quantity, is a far more likely conclusion. Every one knows the power that charcoal has of absorbing ammoniacal gases, and that charred or imperfectly burned bones, in virtue of the free carbon they contain, may have a similar power is very likely; but that pure phosphate or carbonate of lime (viz. burned bones) has any such power, in a degree likely materially to affect vegetation, I can find nothing in chemistry to support. Nor would it prove the fertilising principle of bones to be their power of absorbing these gases, although it could be shown that they did absorb them, or else we would find ordinary wood charcoal, which has this power in an eminent degree to be, as a manure, even far superior to bones, which is far from being the case. Besides, if it were only a medium of absorption that we wanted, we have that in most soils in the red oxide of iron they contain, which is highly absorbent of ammonia, or of easy application to them in the matters of slacked lime and gypsum, the first of which has a strong affinity for carbonic acid, the last for carbonate of ammonia. Neither is it at all plausible to say that fragments of bones buried in the soil at a greater depth from the air than the roots of the plants feeding upon them would draw the carbonic acid and ammonia from the air past these roots, and again return it to them; in short, the absorption hypothesis is so obviously without foundation that we need not follow it farther. If such be the case it may be asked what better can be given in its stead? To this I shall reply by adverting briefly to the objections brought against the ordinary received explanations, remarking, in the first place, that we are always apt to err when we would attribute to a fractional part those effects which we see produced by a conjoined whole. When we reflect that animal bone as a whole is the product of the gradual decomposition and reassimulation of vegetable matter is not the simultaneous reconversion of the *whole* into vegetable matter again a plausible and natural conclusion? The argument that neither the earthy nor animal part of bones singly are efficient as a manure, is not valid when brought against the two combined, neither is it sufficient to prove the non-utility of their animal matter, that bones have been found less efficacious with a greater than with a less proportion of it. As to the question, "Whether do boiled or unboiled bones answer best as a manure?" it may be settled in two ways; if by *best* we understand quickest, unquestionably the boiled bones are best; if, on the other hand, we read *best* as most permanent, the unboiled will get the preference: and the explanation of this is easy. Nature has designed the bones of animals to be the most stable and permanent part of their structure; to accomplish this she has formed them of minutely cellated animal matter; in these minute cells is laid up, or deposited, the earthy part, the phosphates, &c., and the whole is covered by a strong animal covering or periostium. The design of all this is obvious; the inorganic matter gives hardness and solidity to the structure, while the animal envelope in which it is inclosed, both as a whole and in its minutest particle, preserves it from the action of air, moisture, and other external agencies. With such provisions against decay it is no wonder that bones in their raw state should decompose but slowly. When however they are boiled, the action of the heat breaks up and destroys their cellular texture, and at the same time that a part of the gelatine is extracted, the rest is left in a condition much more susceptible of being acted on by the decomposing agencies of air and moisture.

This is the reason why boiled bones come sooner into action than unboiled; it is also a sufficient and obvious reason why they should be sooner exhausted. If we examine bones that have lain for some time in the soil, and been acted on by growing vegetables, we find the animal part undergoing decay much faster than the mineral; this, I think, shews that it is the constituent first in action, as we never find the earthy matter gone and the gelatine left. It does *not*, however, show that the earthy matter is of *no* use, for although burned bones, as far as I am aware, have failed to produce the effect of unburned, yet that the phosphate of lime is to some extent wrought up by the crop, the fact that it exists as a constituent of the crop is sufficient evidence. Still it is a matter of doubt if the phosphate of lime is taken up by the vegetable system as such, or if it is only the phosphoric acid that is useful, the action of bones digested in Sulphuric acid, by which the lime is converted into a very sparingly soluble sulphate, the phosphoric acid and gelatine being set free, seems to say that to these latter constituents belong the effects of the manure. It may be said that the sulphate of lime may be in this case the active agent, but its sparing solubility is an argument against this, and also the fact that gypsum or pure sulphate of lime has but little effect, especially in soils containing lime; whereas bones particularly, if digested in acid, are found an active manure, even in the presence of both phosphate and sulphate of lime.

In a series of comparative experiments, tried with bones digested in sulphuric, nitric, and hydrochloric acids, the effects of the latter were found fully equal to that of the former; now as the nitrate and muriate of lime are but unimportant elements in the analysis of soils and in the ash of plants, we are forced to the conclusion that in these cases the effects were owing to the free phosphoric acid and gelatine.

In arguing against the value of the animal part of bones, the writer says, he is not aware of any one recommending such to be used in its pure state as size, perhaps not, it would be rather expensive; but if I istake not, Professor Johnson, of Edinurgh, no mean authority, recommends, d with much reason, the refuse of glue anufactories, &c., as a valuable manure; d in this neighbourhood, where there are o bone crushing establishments, the part the stock refusing to become dust by the tion of the mill, consisting of the ligantous and tendenous attachments of the nes, cartilage and periostium, is eagerly ught up by the farmers, and, weight for ight, found much superior to bones, at st as an immediate manure, acting alys best, however, when made up with mpost and partly decomposed before ing applied.

In answer, therefore, to the question—"What is the fertilizing principle in bones?" hink we may say with safety, that it is t to be found in their gelatine solely, ither in their phosphate of lime, nor the osphoric acid of that phosphate, nor yet their power of absorbing gases from the , nor any other mysterious power whatever; but simply in the happily adjusted portion, in which they contain both the anic and inorganic materials which nts require, and in their power of yield these up in accordance to the wants of getation; and if we compare the analisis manuring of bones with that of the ps growing after it, whether as to ornic or inorganic matter, we shall find ults amply sufficient to account for all ir wonderful effects as a manure. That se effects may be made more immediate boiling, or the use of acids, there is no estion; but what is gained in this way is in permanence: nor would it be very for any one to trust to the substitution guano or nitrate of soda in place of the atine of his bones: a large portion of ch manure is always lost in consequence their volatility, and there can be little ubt that much of the value of bones is to the permanent condition in which ir animal matter exists.—*M. Cuming*, *f, N. B.*

THE DAMAGE EFFECTED BY THE SPARROW.

Will you oblige me at your earliest convenience by giving publicity to the following statement, showing the damage effected by the sparrow, which I find are increasing so rapidly, believing them to be the most numerous and destructive birds known in this country, and that it is a subject of the utmost importance, not only in an individual but also in a national point of view. Although I may be sanguine as to my opinion, I am aware that many persons think otherwise, and that this feathered race may be useful, being created for some wise purpose, such was the case no doubt in the first order of the creation, but as the Great Creator made man ruler over all, the fowls of the air and the beasts of the field, leaving it to his will to dispence with such that were found more destructive than beneficial. The wolf for instance was of that class, and was annihilated by a reward given for his head; a plea might also be made for rats and mice, but most persons are desirous to destroy them, and it was a custom to pay for the heads of sparrows, until the new poor law came into operation, handed down from our predecessors who well knew their destructive powers.

Under these impressions I am desirous to claim the attention of my brother farmers at this season, when they are so frequently surveying their crops which are almost ready to harvest, in order that they may calculate on the extent of damage effected to their crops by these mischievous birds, and ascertain if they are not, in a tenfold degree, more destructive than beneficial. I find, from Mr. M'Cullock's statements, that the quantity of wheat grown in England and Wales annually, or on an average, is 4,116,666 acres; to estimate the quantity of wheat destroyed by these birds at only 4 pints per acre, it will amount to the surprising quantity of 32160 quarters, sufficient to support the same number of persons in bread, which may in truth be said is destroyed by the sparrow or flying mice, which they have been justly called, and at a time when thousands are in want of food.

Such are my impressions with these facts before us, that I consider it should be no longer a question, but that every farmer should set about the important work to protect his golden grain from their ravages. But such is the case, although singular as it may appear, however lukewarm the farmers may be in the winter as to destroying these birds, they are always on the alert at the approach of harvest with guns and pistols, rattles, and noisy boys to drive them away, I had almost said, to their neighbours' fields; of course, if encouraged, they must be fed. I can almost fancy I hear them exclaiming, on viewing the destruction, we ought to destroy these mischievous birds; but alas, like other men, they are forgetful of the injury, when they have secured their crops, and allow them to continue increasing. Observe, I do not name this by way of disparagement of my brother farmers, knowing that I may be equally culpable.

To give these birds some share of credit, Bradly states that they are useful in destroying insects at their breeding season, caterpillars in particular; such, no doubt, is the case for a short period, and that they destroy, when they are hard driven for food, the seeds of weeds, but as they are a hard beaked bird, their favourite food is corn, to which they train their young, as it will be seen, before the corn is ripe.

To prove they will not destroy caterpillars, if they can get corn, I have known my garden over-run with them, destroying the vegetables, and the sparrows in abundance. Goldsmith states that the caterpillar is a short-lived insect, and that rain is destructive to them, therefore, it may be inferred that they may be destroyed without the aid of the sparrow.

Having confined my calculation on the damage effected by the sparrow to the *wheat*, which is the most precarious crop, slug and wire worm, blight and mildews often prove fatal to it. However it is the most valuable crop, as it produces the staff of life, and forms the principal item in the farmers' accounts.

To enter into a calculation or the damage effected by these birds to the rye, oats, barley, peas, and various sorts of seeds; both in the fields and gardens, it woul amount to a large sum; but as before hinted, in order to give them credit for some bene fit, and by way of a partial set of, supposing that their advantages would compensate fo the damage to the rye, oats, &c., &c., w should then find a serious charge again them as the destroyers of human food depriving no less than 32,160 persons their daily bread, also the thrasher, th miller, and the baker in its manufactur which is a very important consideration.

In viewing the devastations of th destructive birds, few persons will be foun who would not readily admit that thei numbers should be reduced to effect such purpose; sparrow clubs have been adopt with excellent effect, it has been carri out with quiet spirit, in the parish Chalfont, St. Peter's, Bucks; being est lished 11 years, they have destroyed 20,1 sparrows, supposing each pair to have pr duced only six birds, they would ha increased to the overwhelming quantity 60,354; they have, however, the pleas satisfaction of viewing their corn fiel uninjured, and their gardens as free fr caterpillars as the neighbouring parish The mode I adopt to prevent their incre is by paying 6d. per dozen, still I find the flocking from the neighbourhood. I tr that the importance of the subject will be sufficient apology for my having entere into such a lengthened detail.—*C. New*
Court Farm, *Hayes*, *July* 18, 1845.

◆

COLTSFOOT, (TUSSILAGO-FARFARA)

Undoubtedly can be kept under, so far not to injure the crop, by determined pe severance in thorough cultivation.

his note stated that he had thoroughly ined and trenched the soil where the tsfoot had reappeared, to the exclusion his barley crop, but I am much afraid t the draining and trenching was neither hem thorough. Being a perennial and p-rooted weed, growing in a variety of s where there is a superabundance of isture, the draining should be deep and rough. The subsoil plough ought not e used for a considerable time after the ins have been executed: the farmer st judge for himself, as there is such a iety of soils; but the more tenacious the ger the interval: the most retentive will uire from two to three years, so that the may acquire a degree of dryness that soiling may be efficient: it is the want ttention to this that complaints are rife ut the inefficiency of subsoiling. After ng subsoil-ploughed a considerable time ht to intervene before the trench-plough sed, if not, great injury may in many es be done to the active soil by bringing the surface noxious substances, which, llowed to remain in the loosened subsoil some years, would, by the action of air l water, prove innoxious when brought the surface. When deep ploughing can had recourse to with safety, the land uld be properly grubbed, taking care to her off every particle of the roots, as it tenacious of life, and will be propagated the smallest piece of root. The husndry fork may be used with great effect, pecially when trenching with the spade, even the common grape, where the soil not very retentive.—*W. Ewing, Strageath, ieff, Perthshire, July 24th.*

◆

AGRICULTURAL QUERIES.

SHOULD feel much obliged if either you, one of your readers, would give me a tle information about the construction of tank for the reception of liquid manure. friend of mine is about to make two in farm yard; *one* to remain open, while liquid is fermenting in the other.

Would you inform me whether a 9-inch brick work in a square tank, well cemented, will be firm enough?

Is it essential that while the liquid is fermenting the tank should be air tight?

Would the application of *lime* to the liquid, before fermentation, fix the ammonia and prevent its escape?

What period is needed, after closing up the tank, to perfect fermentation? Is not the period dependent on the strength of the liquid, the strongest fermenting soonest?

Where tanks are made is it necessary to take *away* with spouting the water that runs from the stable and barn roofs in, so that it should not run into the tank?

Is the liquid manure, after fermentation, most profitably applied to grass land?

Wishing your journal an increasingly wide circulation, as its merits so richly deserve, I am, your's, &c.—*Simplex, Salop, July 12th.*

◆

STALL-FEEDING CATTLE.

IN several of your late publications there have appeared articles on stall-feeding cattle, signed "Hark forward." On first reading the signature, being myself a sportsman, I expected something in my way; but I am much disappointed. The author is evidently mistaken in his name. "Go-a-head" is his true cognomen. The system he recommends of stall-feeding cattle is very good in the *abstract,* and looks well upon paper: but under it what would old England become?

I am one of those antiquated mortals called "country gentlemen:" some would perhaps say I was a sprig of "Young England." No matter, I love to follow the hounds in pursuit of a fox or a hare, and to go through the woods and fields with my dog and my gun. It was for this that the country was made, and not for stall-feeding cattle. I love to see the working classes dance round the "May pole," on the village green, and to draw "rush carts" to the village wakes adorned with garlands of flowers, or to play at cricket, or prison-bars, and not attending at mechanics' institutions. I like to see my tenants enjoying themselves over a mug of brown ale, and not attending lectures on agriculture.

"Nature, when unadorned, is adorned the most." So says some poet, and poets must have more sense than stall-feeders of cattle. Nature made the country rough, and let it so remain. It surely must be sinful to attempt to mend her works. When England was as nature made it, it must then have been a perfect paradise. Nature intended that brambles, briars, whins, fern, rushes, and thistles should grow; and what can give a better effect to a rural scene or landscape? How beautiful to see thistle down floating in the breeze. But for the natural productions of our hedges, fields, and lanes, what would have become of our poetry? there absolutely would not have been a subject for poets to write upon. What! destroy our primroses, cowslips, and daisies—the honeysuckle, and the shepherd's rose, in order that our cows may be kept in the stall on clover and turnips. What an unpoetical sound has clover and turnips; neither can potatoes or mangle wurtzel be good subjects for the muse. To extract *poetry* from *potatoes* would be as difficult as to extract "sunbeams from cucumbers."

Then again, is one of our most captivating scenes in nature to be cut up root and branch? Are we never more to see a black-eyed, rosy-looking milk-maid, in her linsey petticoat and short bedgown, collecting the cows in the green fields, to be milked at the farm yard, or performing that operation in the meadow by the side of the brook? Is "Giles" never to be made happy by peeping through the fence, or out of a wood, to see these cherry-cheeked nymphs of the milk pail thus employed, and to hear their song, or to catch a smile or a blink of the eye, the very thoughts of which have cheered him *through* many a hard day's labour. Under the soiling system the milkmaid can never be seen out of the shippon, the dairy, or kitchen. How cruel to crummy the cow. She must be a prisoner from the day of h birth to that of her death. Had "Ha forward" ever seen a herd of cows turn out to grass on a fine May day morn would have seen that crummy loved liber as well as himself. Under his system keeping cows we shall only get rancid butter and rotten cheese. Our rough fenc must be levelled down and stubbed u Each farm made into a single field, an the whole country laid out into squar and parallelograms; the boundary fenc straight and well trimmed, will look prim as an old maid. No briars, thistl or fern to be seen; how is a hare, partridg or pheasant to hide itself? Whins a broom to be stubbed up and burnt; course no fox covers. Marshes, ditch and wet fields to be drained; how th can a snipe or a woodcock live? Rush to be destroyed; how then are the childr of the poor to make *grenadier caps?* Th country was intended by nature for count gentlemen to hunt and shoot over, a that children might make grenadier ca gather roses, daisies, and buttercups, not made for stall-feeders. Scientific far ing means no game, no natural plants, poetry. Give me the old English sty of farming—little fields, crooked fenc spreading out several yards on each sid and full of timber trees: we sportsmen then sure to find game, and the poet a s ject. "Nature despises a straight lin Is not game quite as necessary to a g dinner as roast beef and plum puddin And will not roast beef be far sweeter wi a better mixture of fat and lean, when th animal has been feeding several years the natural pasture, than if fed, in th months, by steam and oilcake, in a sta If "Hark forward" had understood th true principles of producing good beef would have known that alternate layers fat and lean could not be produced except e over-feeding and starving the n the proper and natural state the *lean* is laid on in the *winter*. *t* in the *summer*; and, by several uch feeding, we get that prime ch is the boast of old England, of surrounding nations, and the of the world." Begin to stall-, and "England's glory will

ve seems to me to be the *common* of the subject.—*Tally-ho! Bram-all, July 24th.*

◆

NO. V.

ADVICE UPON ADVICE,

ON WINTERING CATTLE.

pt must be upon precept; line upon line; nd there a little."—*Isaiah* XXVIII. 10.

y much delighted with the reflection of my Roger de Coverley, and I found that since m in the country he had drawn several ob-ether out of his reading in Baker's Chroni-authors, who always lie in his window."—).

holder which bringeth forth out of his trea-w and old."—*St. Matthew* XIII. 52.

llowing article "On Housing Cattle " we are indebted (as intimated in Dr. Thos. Comber, a distinguished in his day to the improvement of and an active supporter of the Mu-icum, the then leading medium for gricultural information, as the Royal al Society's Journal is now.*.

reviving old advice, and requesting n in a modern periodical, perhaps I owed to meet any objection thereto, marks upon that point and upon the advice in rural affairs generally, an ch is apt to be undervalued by two eaders of very opposite characters, y those who want it least, and by require it most. Of the former, our skilled and accomplished far-require neither hint nor advice, I ly observe, that their being apt to an article of which they stand in no erfectly natural, but does not neces-titute them good judges of the case: as men in the uniform enjoyment of good health are not always the best valuers of the merits of a medicine. The best informed readers will however find that good advice whether old or modern, may have its value, when it even does not appear to be in present demand. Bad farming it will be admitted is the result of ignorance or of idleness, corporal or mental, and while knowledge and skill are not hereditary in our children, and a father's precept and practice if they are ever so good, are a good deal better for being backed in print, idleness is a disease, a sort of decline, into which sons and servants may fall any month in the year. Now the ancients had a maxim "Occurrite morbo," meaning prevention is better than cure, and this maxim having been found good in all ages, in morals and in physics, it must be good in farming, which is made up of both. Indeed whatever tends to assist in keeping off a plague or cholera morbus must *always* have its value; and good advice placed within easy reach, like chloride of lime or any other disinfective or febrifuge ought at all times to be made welcome, whether it be requisite just now, or only likely to be required by his survivors when the Goodman's head is laid low.

Intelligent readers need not to be assured that any good advice contained in the following article is none the worse because they knew it before, nor need I remind them, that if it be not wanted *everywhere*, it is, *somewhere*,—and *anywhere* where it is wanted, it will be of full value, though valuless *elsewhere*.

As for its being old,—so much the better this time—for we cannot be charged with "*novelty*" and "*new fangled ideas*" and "*modern notions about farming*." For my own part, I think advice is something like soap, and candles, and ale, and sundry household articles, "not so well for being too new," but like Cheshire cheese and Port wine "all the better of a little age." I am so far from objecting to the occasional revival of old advice, that I fancy the pages of some modern periodicals would be more graced by the simple reprint of some of those valuable productions of a former age which we here and there scent out, as roses born in their day to blush unseen, but whose fragrance still survives, than in printing some of the pepper and mustard ebullitions of irritable and dogmatic correspondents, who substitute preferences and weak partialities for calm discrimination, surface views for discernment, prejudice for judgment, and wrangling for reasoning. The having ranged among books of the past as well as the present, has led me to think that a valuable volume or two might be culled in the paths of Agricultural lore grown mossy with age. Such a "Restitution of decayed Intelligence" as old Verstegan the historian calls it, would have this good effect amongst others of proving,—that many a bad practice of former days which still clings to English Husbandry under the supposed sanction of antiquity was neither sanctioned nor uncensured by the thinking portion of our forefathers,—of whose thinking and observation we may say in the lines of Belfour:

> "So much hath wisdom's ample hoard
> By various authors been explored,
> Scarce any,—Science who pursue,
> From her can gather aught that's new.
> The richest mind with learning fraught,
> Thinks as before him, numbers thought,
> And plans commends, that o'er and o'er,
> Have been commended oft before,
> For all in nature that was known,
> To us have early authors shewn."

To patriotic minded men like yourself, Mr. Editor, it must at times be discouraging, (as well as to many of your worthy coadjutors) to find evil practices still existing which were denounced in the pages of your literary predecessors fourscore years ago, and if any parties have a right to complain about giving old advice over again, it is they who have the trouble to give it. When however Dr. Comber wrote, I suppose that only scholars read,—now, every body reads, I suppose, who knows how (or if not, its a great shame; Farmers' Heralds are cheap enough, and what do men learn to read for?) Now, farmers profess to be anxious about the corn laws, and why not about cattle? Now, as there are thousands of farmers who don't patronize the Cattle Insurance Companies, they must, I suppose, be intent on "insuring" their cows at home, and upon saving their money, milk, and bacon, and if so, there is hope that in your pages Dr. Comber may do more good than he could accomplish when alive. Should you however effect none of the positive good of dissuading any one from the evil practices to which he is wedded, should you turn no one from the error of his ways in farming, there is still the negative satisfaction, that in placing upon record and promulgating good advice, old or new, you may *prevent* many a young person from *adopting* bad habits, and *invite* numbers who are to form the farmers of the next age to better practices than those of their predecessors. In the present instance, spite of the fa that every county abounds with farmers wh "need no teaching," whose practice "can't b mended," who "knew all about Cows befo you and I were born," and who "can tell ho to manage Cattle better than Dr. Comber a all your correspondents put together;"—th are those who will think, that by expo existing folly and obviating evil, by diffusing taste for thinking and reflection, for readi and investigation, for observation and expe ment the Farmer's Herald is laying posterity under an obligation. As you have doubtl read the fable of the old man and his ass, y will not hope to please every body in a la body of readers; the Museum Rusticum in limited circle of subscribers had some fu customers to deal with, and in the fourth v lume of their work, the Editors (of which th were about half a dozen) give a droll acco of the complaints of readers and of their stra expectations; among the latter, appeared expectation that a periodical circulating in e province, was to treat mainly upon subje belonging to that locality, which the re inhabited, and as I hear that the Farm Herald has increased much in circulation, is read in every county, it is possible some of its now numerous readers may forget latter fact, and not bear in mind that its o is not provincial and local, so much as ge and national. Of such a mistake I know better corrective than the following passage a letter of the Editors of the Museum R to their readers upon this point:—"The pr pal intention of our work is to convey knowledge to the common farmer, and to ervice to him, we must endeavour as much we can, to promote the circulation of useful ctices from one part of the kingdom to the er. If the Cornish landholder has any piece knowledge which conduces to the increase is annual profit, it is our desire that this uld be communicated to the Yorkshire and th country farmer, who, under the same or circumstances, will be in a manner sure to p the like benefit from the practice.

' Our readers well know we do not give too t encouragement to theory: yet, without ory there can be no improvement in any nce or art: for what is the *idea* of an im- vement before it is reduced to practice but *ry?* and this is the kind of theory we would h to encourage. Many men may suggest rovements, who have neither leisure nor *rtunity* to make experiments. If it had not n for Mr. Wyche's *theory* of Burnet, the *tical* cultivation of it would never have been ertaken by Mr. Rocque."

In conclusion, there is a class of readers who so remarkably keen in detecting and de- ncing "old advice," that one would suppose y had already availed themselves of all the dom of the past, and were peculiarly alive to future and to new discoveries and advice, ereas, it is a fact equally strange and amusing t good advice, whether old or new, is wholly ocent of any influence upon their principles practice, and, therefore, I might in their case pectfully urge, that they have no claim upon for new advice, until they show that the "old vice" has begun to take effect. On the present asion, however, instead of justifying myself them by any argument, perhaps Mr. Editor will allow me to do so by an anecdote, of a thy divine, who, on being told somewhat antly by a young lady of his congregation, "she had heard his last sermon I dont how many times," calmly replied, "If so, , you must be quite familiar with it, and no doubt oblige me with some proof that are." "No sir, I can't do that, though sure I've heard it often." "Ah then. my friend, it is evident you have not heard it enough yet, you must have it once more."

"OF HOUSING GREAT CATTLE."

"Among the late changes" (writes Dr. Comber March, 1764) "in the management of farms in these parts, (Yorkshire) I must rank those which arise from housing of great cattle, by which name I understand cows and oxen. The practice has long been in vogue with those who had only one or a few cows, but I remember when those who had many never thought of such a practice, with regard to their herds in winter, though they occasionally used it with respect to particulars. However, the obvious advantages resulting from the method, with regard to a *few* cattle, has induced our farmers to adopt with respect to *more*: yet is it not so generally followed as it ought, and by many otherwise sensible men, is even held problematical. I shall, therefore, enumerate all the objections which have been, or can, I think, be made to the practice, give answers to them, and then display its advantages. The objections to this practise are, that—

1. It renders cattle more tender.
2. It consumes much more fodder.
3. It requires much more attendance.
4. It is very expensive in building of houses, leading home of hay, and leading out of manure.
5. It is wasteful of manure.
6. It is not so healthy as lying out, which gives exercise

As to the first, it is acknowledged, that a cow *used* to the house will suffer much more than one not used to it, if left out of doors. But the improved method supposes them to be housed from the first colds and rains at the beginning of winter, till the pastures are broke at May-day: so this objection amounts only to an assertion, that animals *used* to proper care, will, if neglected, suffer more than such as are *used* to be neglected; an assertion, which, if it prove anything, proves that we should neglect all our domestic animals. Now what degree of true hardiness cattle can derive from lying with their sides on wet ground, and having their ridges, (spines,) well known to be tender and the source of many maladies, exposed to all the rain, &c. of a whole winter, and their feet and legs benumbed in wet grounds continually, I leave any man of sense to determine.

The generally wretched condition, in spring, of cattle which have lain out, compared with the good plight of those which were in equal circumstances at the beginning of winter, but have been housed and fed with the same fodder, will shew how ridiculous it is to object tenderness to the practice of housing.

White cattle are universally allowed, and I think with reason, to be more tender than the *red, brown,* or *black*. Now the breed of cattle in this part of the world, is notoriously run into the *white* and *whitish:* so that the argument for housing is much stronger with us, while the breed continues in this strain, unless we will *kill* our cattle, for fear of *tendering* them.

As to the second objection, it is admitted that housing, of course, consumes more fodder apparently, but then we must consider how far it is a *just* objection to the practice. It is obvious that if cattle are to be kept, *not only alive*, but *well*, and in condition to be useful in spring and summer, they must have their bellies *properly* filled. The only question then at present is, with what their bellies will be most advantageously filled, whether with *hay alone*, or hay and *winter grass?*

Now any person, who knows anything of the matter, knows that winter grass is one of the best manures that can be bestowed on meadow land, as it keeps the roots of the grass much warmer than any other manure can do which lies not so compact. But winter grass having *lost its genuine juices*, and being in a state of corruption, must be on many obvious accounts, the worst food which can be given to animals that are to yield milk, or to work in summer, therefore, the worst food for cows and oxen; so that he who eats off his winter grass, eats his crop of hay *for the succeeding year* to fill the bellies of his cattle with bad humours; and if *this* be a prudent saving of fodder, then is housing of cattle bad husbandry.

I must also here observe, that the quantity of hay trod under foot, spoiled by rain and the dung of cattle, and scattered abroad by winds, is not inconsiderable, so that if this be added to what lying out cattle really eat, we shall find the difference betwixt the quantities consumed by them and an equal number of housed cattle not nearly so considerable as may at first be thought.

The third objection seems more specious, but will be found equally inconclusive."

(*To be continued.*)

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* Dr. Comber was the eldest son of Thomas Comber, Esq., of East Newton, near Malton, Yorkshire, where he resided on a paternal estate, enjoyed by him in the fifteenth generation from Sir John de Newton. The Rev. Thos. Comber, jun., after completing his education at one of the universities, became the constant companion "for the greatest part of twenty years" of his worthy farther, a gentleman of great patriotism and public spirit; during this period, the son distinguished himself no less than his sire by an ardent devotion to rural studies and pursuits, the results of which appear in his numerous communications to the Museum Rusticum, in which work appeared a friendly debate between him and Arthur Young upon some interesting agricultural topics, which the latter rendered more public by embodying in his celebrated 'Farmers' Letters to the people of England,' which work is cited in Loudon's Encyclopedia of Agriculture, as Young's first published agricultural work, but without any date; the date of my copy is 1767, the same year in which he entered upon the Samford Hall Farm. The Biographers of A. Young in the Penny Cyclopedia have fallen into the error of stating that his "Course of Experimental Agriculture," 2 vols., 4to, consisting of experiments carefully noted down at Samford Hall, was his second work, and that it was the result of *five* years observation, whereas the work was published *three* years only after he went to that farm, namely, 1770, and was preceded by his "letters" as above, and his "Tour through the Southern Counties," which was printed in 1763. The same writers give 1768 as the date of his "Northern Tour," whereas London gives it 1770 which is correct, as I have the 1st edit. at my elbow: not very important matters certainly; but as Young's tours caused a greater sensation in their day than any subsequent work upon agriculture and led to its revival, it would have been as well to have had the records of them given correctly by persons who were *paid for their Biographical research.* London also, in his account of Young, falls into the somewhat ridiculous error of telling us that in his "Annals of Agriculture" he had George the Third's "*farming bailiff*" for a correspondent, Ralph Robinson, whereas the account of the farm of Mr. Ducket of Petersham was sent to the editor of the "Annals" by *King George III. himself*, and in his own *hand writing*, under the assumed signature of Ralph Robinson.

Dr. Comber published in 1768 "Free and candid correspondence on 'The Farmers' Letters'" with their author A. Young, Esq.; and in 1772 he published "Real improvement in Agriculture, on the principles of Arthur Young, Esq.," and a letter to the celebrated Dr. Hunter, author of the "Georgical Essays on the Rickets in Sheep."

His writings were not confined to rural subjects exclusively, as it appears he became "a champion of those civil and religious rights which were secured to us at the glorious revolution" in his "Vindication of the Revolution," a work which was severely attacked in the "Critical Review" of that day.

His father dying suddenly in May 1765, Dr. Comber, being heir, succeeding to the paternal property, and subsequently became Rector of Buckworth in Huntingtonshire. I regret to add that he closed a useful life which furnished an admirable model for our country gentlemen, at the comparatively early period of 1772, when he could not be more than forty-nine, or fifty

rs of age. His remarks and writings are
ally conspicuous for candour and energy,
l frequently for originality, and his commun-
tions being always signed with his name in
ll, he was somewhat intolerant towards writers
o had not the vanity or courage to give
ything more than their "mark," and he carried
s indignation upon this point so far, (or rather
carried him,) that he gave the Museum Rus-
um a whole essay against anonymous signa-
res, repecting which, I shall only say, for one,
at when I can bring myself to think as well
my own productions as I do of his, and of
me of your correspondents, I may begin to
tertain the idea that signatures are as impor-
nt as sentiments, the prospect, however, ap-
ars more likely that I shall remain your's
ly—*Hark! Forward!*

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THE OAT.

E oat *(avena sativa)* is a well-known species
the genus *avena*, a plant of the family of the
amineæ, in the class Triandria Digynia of
nnæus. In Britain the oat has long been
tivated, both as bread and horse corn, but
re peculiarly adapted to the northern coun-
s. It is the easiest of culture of all grains,
d its country is unknown, unless the wild oat
considered as the parent species, which is
ghly probable. Its varieties are numerous,
d may be increased systematically by cross
pregnation, or by selection; the potato-oat,
r instance, has degenerated, but may be re-
red by collecting the small bosom oats, and
wing them. The principal kinds are, of the
ly sorts—the Red oat, Poland oat, Potato,
iezland or Dutch, Georgian oat, &c.; late
ds—the Black oat, Tartarian oat, Angus-
re, Bainsley, &c. In selecting from among
varieties, the Poland and Potato oats are
best for rich lowland lands; the Angus and
nsley for uplands and late climates in a state
good cultivation. Any kind of soil, from
stiffest clay, to moss or bog, provided it be
dry, will grow them, if ploughed at a pro-
season, and the seed judiciously sown and
ered. Oats are generally sown upon one
ow, on newly-broken-up lands; in regular
tions, oats are chiefly sown after grass, some-
es after turnips, and too frequently after
ley and wheat; a system of cross-cropping
ch ought to be entirely abandoned. One ploughing is generally given to the land in January, so that it may get frosted and mellowed for receiving the harrow. I have generally practised the harrowing and ribbing clover layers, previous to seeding the land, which gives the seed a level bed, and prevents any of it from falling behind the furrows; less seed does in this manner, it vegetates more equally, and an opportunity for hand-hoeing is given, if required. The best oats, in quality and quantity, are those which succeed grass. No kind of grain seems better qualified by nature for foraging upon grass lands than oats, as a full crop is obtained in the first instance, and the land left in good order for succeeding ones. They prefer a moist and cool climate, and are sown from the latter end of February to the beginning of May. The general oat seed-time is about the middle of March; no preparation is given to the seed, but it should be plump, fresh, and free from the seeds of weeds; the quantity sown broad-cast is from four to six bushels per acre; when ribbed or drilled, one, to one and a half bushel per acre less. The potato oat requires less seed than any of the other sorts. This arises from its tillering property; and also, from having no awn, a greater number of grains are contained in a bushel. They are generally sown broad-cast, but when sown after turnips, or on well pulverised soils, many adopt the row culture. The after-culture depends upon the mode of sowing; hand-hoeing is frequently practised when they are ribbed or drilled, and hand-weeding when they are sown broad-cast, before the flower stalks begin to shoot up. In the southern parts of Britain they are generally cut with the scythe, carried loose to the barn or stack—a slovenly practice, and more honoured in the breach than the observance—but in the northern districts, whether mown, or cut with the syckle, they are tied in sheaves before carting.

Oats are ready for harvesting when the grain becomes hard, and the straw yellowish. They should generally be cut before they are dead ripe, as it prevents the shedding of the grain both from wind and the stroke of the scythe or sickle. Early varieties are more liable to these losses than late ones. In harvesting oats in wet seasons, the practice of *gaiting* them is generally adopted. Should the season be dry, we would recommend them to be bound and stacked immediately after cutting; this prevents waste, and the binder can execute more work, although they may be five or six days later in coming to the stack. The produce is greater and of better quality in the northern than in the southern counties. In the former, more attention is paid to their culture, and the climate is more favourable for perfecting this grain. Nine quarters per acre is considered a good crop in the north, but ten and even eleven quarters are produced, and from two to three and a half tons of straw per acre. They yield meal in proportion, as 8 lbs. to 14 lbs. corn, which is the general food of the peasantry in Scotland, north parts of England, and Ireland. Oats are not subject to many diseases; sometimes the smut; but the common injury sustained by oats is from wireworms and larvæ of insects, which abound in newly broken-up lands. The most certain way of avoiding these is by not ploughing the land, especially if old grass, till immediately before sowing. By this means the insect is turned down, and has the grass and its roots to feed upon; and before it can, or it is necessary for it to work its way to the surface, the corn is beyond its reach. In late harvests, particularly in the northern parts of the island, the oat is liable to be frosted, and rendered unfit for seed, &c., before being harvested, for which there is not any remedy.—*Far. Jour.*

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ROYAL AGRICULTURAL SOCIETY.

The Annual Country Meeting of the Royal Agricultural Society of England was held at Shrewsbury on the 15th, 16th, and 17th ult. as previously advertised in our columns.

The judges' trial of implements took place on the Saturday previously, and on Monday the public trial of those which were intended for the cultivation of the soil was held in a field of Mr. Taylor's at Monkmoor. Amongst the ploughs, Lowcock's one way plough, and those of Messrs. Harkes, of Mere, and Wood, of Knutsford, in Cheshire; Messrs. Bentall of Heybridge, near Maldon, Sanders, Williams, and Taylor, of Bedford, and Mapplebeck and Lowe of Birmingham, were pronounced by all who saw them to be complete implements of the kind.

In our list of winners for cattle premiums it will be found that Viscount Hill, and J. Banks Stanhope, Esq., were conspicuous amongst the exhibitors of short-horns. In the one case, Mr. Parkinson, of Leyfields, holds his usual place as a breeder; in the the other, Mr. Jaques, of Easby Abbey, stands conspicuous. In the Herefords, it will be remarked that the exhibiters were in every case the breeders—a circumstance reflecting the greater credit on them. In Devons, Messrs. Quartly and Turner maintain their accustomed position, the former winning two prizes, the latter three. In cattle of any breed, the once celebrated longhorns still show their superiority over the *ordinary* breeds of miscellaneous character, the Honourable M. W. B. Nugent having carried off four prizes out of six. In cart-horses the first prize was awarded to a Suffolk stallion, exhibited by Mr. Crosse, of Beyton Hall, Suffolk. We are informed that there were 103 foals produced by mares covered by this horse in the last season. His stock is much esteemed in the county of Suffolk. This horse was sold at the sale, and purchased by Mr. W. Fisher Hobbs, of Mark's Hall, Essex. In Leicester sheep the names of some well-known breeders will be recognised. But it is in the class of Southdowns that the competition was most severe, Mr. Jonas Webb winning the first prize for the shearling ram, Mr. Grantham one prize, and his Grace the Duke of Richmond carrying off three prizes from such champions as Webb and Grantham. Mr. David Barclay seems determined not to be driven from his position, having again, as last year, won the prize for shearling ewes. In the class of long-woolled sheep, not Leicesters, the main competition, as last year, was between the improved Cotswold and the new Oxfordshire. Messrs. Handly, Lange, and Smith last year carried off all the prizes in this class except one, and this year they have monopolized the whole. In mountain sheep, a class adapted for the encouragement of any breed which might be especially adapted to the district, all the prizes were awarded to the Cheviots, thus giving them a decided superiority over the district breeds. The prizes for pigs are divided into two classes, namely, the large breed and the small breed. Mr. Fisher Hobbs was as usual successful, having won wo prizes in the small class; and what is till more remarkable, the sire and dam of r. Randall's boar, which obtained the ize for the large breed were both bred by r. Hobbs.

July 16*th*.—The Implement yard was en to-day. The number of implements hibited is not so great as last year, but re is a gradually increasing desire on part of the makers to turn out well-ished articles, and to bring to the con- uction of them a greater amount of chanical skill, the result of which is t though not so numerous as last year, d the want of direct railway communi- ion may account for it) yet there is a chanical superiority which appears to to make ample amends for mere lack numbers. The following is the award of judges in this department:—

n pounds, the Earl of Ducie, Uley Culti- ator.
n pounds, Mr. John Corns, Chaff Cutter.
e pounds, Messrs. Saunders, Williams, and Taylor, Harrow.
n pounds, Mr. Richd. Hornsby, Drill Presser o Deposit Manure.
e pounds, Mr. Richmond, Churn.
n pounds, Mr. James, Weighing Machine.
e pounds, Mr. Richmond, Steam Apparatus.
e pounds, Mr. Lowcock, One Way Plough.
e pounds, Mr. Bruce, Paring Plough.
Ten pounds, Mr. John Read, Subsoil Pulverizer.
Ten pounds, Mr. Crosskill, Clod Crusher.
Fifteen pounds, Mr. Newberry, Horse Seed Dibbler.
Ten pounds, Mr. Dean, Linseed Crusher.
Ten pounds, Mr. Hill, Moveable Sheepfold.
Ten pounds, Mr. George Frere, Norwegian Harrow.
Ten pounds, Mr. Viago, Seed Planter.
Two pounds, Mrs. Cartnell, Weighing Machine.
Two pounds, Earl Ducie, Corn Crusher.
Two pounds, Mr. Harkes, Horse-hoe.
Silver Medal, Mr. Dickon, Horse-hoe.
Five pounds, Earl Ducie, Cart for general purposes.
Two pounds, Mr. Crosskill, Improved one-horse Cart.
Medal, Mr. Bentall, Hand Seed Dropper
Five pounds, Mr. Read, Fire Engine.
Three pounds, Mr. Hornsby, Oil-cake Breaker.
Ten pounds, Mr. Sanday, Winnowing Machine.
Five pounds, Mr. Phillips, Turnip Cutter.
Five pounds, Mr. Spencer, Chaff Cutter.
Three pounds, Wedlake and Thompson, Haymaking Machine.
Five pounds, Lieut. Vibers, Compound Lever Power.
Ten pounds, Earl Ducie, Thrashing and Dressing Machine.
Ten pounds, Mr. Dean, Steam Engine.
Five pounds, Mr. Cambridge, Steam Engine.
Two pounds, Mr. Hill, Granary Crane.
Silver Medal, Mr. Hill, General Exhibition of Gates, Hurdles, Cribs, &c.
Silver Medal, Mr. Richmond, Potato Washer.
Silver Medal, Mr. Evan Thomas, Leverage applied to Scarifier.

The following were selected by the judges for further trial:—Mr. Harkes, plough; Mr. Howard, plough; Messrs. Mapplebeck and Lowe, plough; Messrs. Sanders, Williams, and Taylor, plough; Mr. Wood, plough; Mr. Bentall, plough; Mr. Hornsby, drill for general purposes; Mr. Hornsby turnip drill on the flat; Mr. Hornsby, turnip drill on the ridge; Mr. James Smyth, turnip drill on the ridge; Mr. Garrett, turnip drill on the ridge; Mr.

Scragg, tile machine; Mr. Clayton, tile machine; Mr. Beart, tile machine.

From amongst the 20 brick and tile machines exhibited the judges have selected, for further trial, the three above mentioned. In this respect we are convinced, from what we saw of the operations of every machine upon the ground, the judges are doing, at the same time, that which is best for the makers and best for the public. Although there is but little perceptible difference in *modus operandi* of the various tile machines, there is nevertheless a point of superiority to be attained, which is neither more nor less than this, that the dies shall throw out a perfect stream of pipe or of tile, which shall only require the further operations of cutting and carrying away. As to doing away entirely with the use of the pug mill, or a careful preparation of the clay by hand, we do not for a moment imagine it likely; we cannot, therefore, give implicit credence to Mr. Ford's statement that his machine, Stand No. 79, Art. 1, is calculated to effect this object. It is, however, a very complete and useful piece of machinery. If we were tasked to pronounce judgment upon any tile machine we should, from what we saw in the show yard, name "The Economic" as most to our minds. It cannot be expected that we should pretend to afford space for the enumeration of all the implements which were exhibited, as the society's catalogue of them extends to 174 closely printed 8vo. pages, forming quite a respectable volume. The following, however, is a list of the exhibiters:—

Stand No. 1. William Joseph Joyner, Aveley Hall, Romford, Essex.
2. Mr. W. Abraham, Barnetby-le-Wold, Brigg.
3. Mr. Robert Beart, of Godmanchester, Huntington.
4. Mr. Thomas Bigg, of 15, Crawford-street, Portman-square, London.
5. Mrs. Mary Cartmell, of No. 34, London Road, Liverpool.
6. Egerton W. Harding, of Oldsprings, near Market Drayton.
7. Mr. J. Wilmot Newberry, of Hook Norton, near Chipping Norton.
8. Mr. W. B. Webster, of Hounsdown, near Southampton.
9. M. E. H. Bentall, of Heybridge, near Maldon.
10. Mr. James Comins, of South Molton.
11. Mr. J. Cooch, of Harleston, Northampton.
12. Lieut. J. Vibart, Chilleswood House, near Taunton, Somerset.
13. Mr. F. M'Neill, Finsbury Circus, London.
14. Mr F. W. Etheredge, Park-st. Westminster.
15. R. Robinson, Lisburn, near County Antrim
16. Mr. W. Clay, of Lineal, Ellesmere, Salop.
17. Mr W. Crosskill, Beverley Ironworks, Hull
18. Mr. J. Gillett, Brailes, Shipston-on-Stour.
19. Mr. P. Love, Naseby, near Welford.
20. Mr. J. Pritchard, Broseley, Salop.
21. Mr. E. Thomas, Keel Meifod, Welshpool.
22. Mr. A. Vickers, Manchester.
23. Mr. S. Beardmore, Leek.
24. Mr. Bruce, Tiddington, Stratford-on-Avon.
25. Mr. H. Clayton, Upper Park-pl. Dorset-sq.
26. Messrs. Barrett, Exall, & Andrews, Reading
27. Messrs. Young and Spence, Shrewsbury.
28. Messrs. Cottam and Hallen, Winsley-st., Oxford-street, London.
29. Mr. W. Colbourne and Mr. James Ward, Stratford-on-Avon.
30. Mr. T. Dickon, Thoresway, near Caistor.
31. Mr. D. Harkes, Mere, near Knutsford.
32. Mr. S. Harris, Barker-street, Shrewsbury.
33. Mr. J. Haywood, Little Leigh, Northwich.
34. Mr. G. Kelby, Queniborough, Leicester.
35. Mr. T. Teago, Longworth, near Abingdon.
36. Mr. H. Chamberlaine, Bredicot, Worcester.
37. Mr. T. Coombs, Nether Wallop, Andover.
38. Mr. J. Cornes, Barbridge, Nantwich.
39. Mr. T. J. Croggon, Ingram-court, Fenchurch-street.
40. G. E. Frere, Esq. F. R.S. Edinburgh.
41. Mr Hunter, Ulceby, Barrow-upon-Humber
42. Mr. W. N. Nicholson, Newark-upon-Trent
43. Mr. W. Sanday, Holme-Pierrepont, Nott.
44. Mr. J. Teasdale, Burneston, Bedale.
45. The Earl of Ducie, Tortworth Court, near Wotton-under-Edge.
46. Mr. R. Hornsby, Spittlegate, Grantham.
47. Mr Hill, Brierley Hill Iron Works, Dudley

Messrs. Wedlake and Thompson, Romford.
Messrs. Mapplebeck & Lowe, Birmingham
Mr. W. H. Vingo, Penzance.
Mr. John Howard, Bedford.
Mr. A. Gower, Market Drayton.
Mr Cambridge, Market Lavington, Devizes
Mr J. B. Denton, Gray's Inn, London.
Mr John Elliott, architect, Chichester.
Mr A. Evans, Pheasant Farm, Welshpool.
Mr E. Holland, Dumbleton, Evesham.
Mr John Cartwright, Shrewsbury.
Mr A. Dean, Birmingham.
Mr Garrett, Leiston Works, Saxmundham.
Mr J. C. Grant, Stamford.
Mr Henry Lowcock, Westerland, Marldon, Paington.
Mr Roberts, Above-Bar, Southampton.
Mr C. Montague, Gloucester.
Mr W. Morton, Donnington, Newport.
Mr Z. Parkes, Birmingham.
Mr J. Richmond, Salford, Manchester.
Messrs. C. Phillips & Co. Bristol.
Messrs. Sanders, Williams, & Co. Bedford.
Mr T. Scragg, Calveley, Tarporley.
Messrs. H. Smith and Co., Stamford.
Mr Richard Smith, Upper Hall, Hampton Lovett, Droitwich.
Mr J. Smyth, Peasenhall, Yoxford, Suffolk
Mr J. Spencer. Hopton, Worksworth.
Mr Twist, Bridgetown, Stratford-on-Avon.
Mr W. Wood, Knutsford, Cheshire.
Mr Joseph Wragg, Derby.
Mr J. Wright, Chipping Ongar, Essex.
Mr W. Ford, Fulham, near London.
Mr James, 44, Fish-street Hill, London.
Mr J. Read, Regent's Circus, London.
Mr Cornes, Weltenhall, Overton, Winsford
Messrs. Stace & Vallance, Berwick, Lewes.
Messrs. T. Gibbs and Co. London.
Mr T. Taylor, Banbury.
Mr George Bruce, Liverpool.
Mr F. Roe, Strand, London.
Messrs. E. and J. Davis, Shrewsbury.
Messrs. G. Gibbs & Co. Down-st. London.
Mr E. J. Lance, Frimley, Bagshot.
Messrs. Hare & Hyde, Cecil-st. Strand.
Mr W. D. Jones, High-st. Shrewsbury.

What the English farmer wants at the present day is a useful implement at a moderate price, and in going round the various stands we were forcibly impressed with the opinion that the following will come under this designation:—Art. No. 6, Stand 8. This is a small tin case, which is easily held in the hand, and by a slight pressure discharges two or more grains of wheat or other seeds into the hole made by the men with a common dibble. The quantity of seed discharged is regulated in the most simple manner. The great objection to dibbling in many parts of the country is the difficulty of getting children to put the right quantity of seed into each hole. This appears to us of equal utility with a similar implement, Art. 4, Stand No. 9. There were several one-horse carts. We have before expressed our firm conviction as to the general superiority of one-horse carts over every other description of cart or waggon for farm purposes, where the land lies together; where, however, the distance from one part of the farm to another or from the homestead is great, large implements of this kind are required for obvious reasons—of these we think well of Art. 1, Stand 6; Art. 10, 12, Stand 17; Art. 3, Stand 19, (this latter, however, appears more suited for road work;) Art. 1, Stand 57, and Art. 1, Stand 65. Of chaff cutters there were several upon the guillotine principle, of which the following may serve as a description, Art. 1, Stand 29:—This engine presents a different principle to all others. The knife is actuated by a crank moving it up and down; it has two edges, and cuts both ways, passing through a groove, whereby the straw, &c., gets a bearing on both sides while it is cut; the up and down motion of the knife frees the rollers from being clogged. It cuts clear and easy, at the rate of twenty-five to thirty bushels an hour. The straw remains still while being cut. The simplicity of this little implement, and the quantity of work it seems capable of performing, excited much commendation. The beneficial results of drill husbandry have drawn the attention of mechanists to the improvement and perfection of drills for general purposes, of which Mr. Smith, of Peasenhall, Yoxford, Suffolk, showed an excellent assortment. Of no less importance than the foregoing was the very excellent show of horse-hoes;—without "the horse-hoe" the "drill system" would soon pass away—it is necessary to the success of that system, and with the extension of the practice of drill sowing and dibbling, we may reasonably infer that the improvement of the drill, the dibble, and the horse-hoe will keep pace—of these latter the undermentioned appeared to us deserving of particular notice, Art. 6, Stand 61 :—

The following are some of its advantages :— 1. The facility with which it may be altered to hoe after drills of every size, from one to ten or twelve coulters.—2. The easy and instantaneous manner in which the hoes may be steered or swerved where the drilling has not been well executed.—3. The application of a lever, by which means the hoes may be easily and speedily lifted from the ground at the termination of each direct line of drilling or lands' end (as it is technically termed).—4. The form of the hoes, which are of so light, yet strong a construction, that they present no liability to break or choke with soil.—5. The ease with which the hoes may be altered to work either in a straight line with each other, or intersected according to the condition of the land or the will of the workman.—6. The facility which is afforded for taking one or more of the hoes out of work, in order to hoe an unequal-sided or gored piece of land.

And Art. 2, Stand 30—of this, which appears a durable and well finished implement, the price 30s. is the great merit. No farmer who drills at all, and no man who farms, will continue the broadcast system when he has fairly tested the comparative merits of that system and of the drill—should be without this inexpensive implement.

Of that important implement, the plough, there were many specimens exhibited at the various stands—incapable, as is the plough, of any very important mechanical improvement, there was nevertheless in very many of those exhibited instances of scientific alteration which tend to the more easy working of it, and to its better operation upon the soil.

Of scarifiers, grubbers, cultivators, harrows, and clod-crushers there was a very excellent assortment. Art. 1, Stand 19, invented and improved by the exhibitor, which, if its performance be at all equal to his promise, must be a very useful implement. The following is his account of it:

1. This implement is all made of wrought iron, consequently not so liable to break. 2. It can be lowered into the soil and raised instantaneously by the single effort of one man, so as to run round at the head land upon the wheels. 3. It can be worked any depth, from merely scratching the surface to fourteen inches.—4. It can be worked with any number of coulters, from three, cutting the soil every two feet; five, cutting every foot; seven, cutting every seven inches; to nine, cutting every five and one-third inches.—5. The coulters are so arranged in the frame that they will not choke with twitch or other weeds.—6. The coulters are so formed that all roots are raised to the surface.—7. By a peculiar conformation of the coulters, whenever any twitch or other root weeds are brought to the surface, they immediately pass off, therefore it never draws the roots from the clean to the foul parts of the land.—8. There are shares which can be attached, to cut off thistles or other weeds that grow from top or perpendicular roots.—9. It has the wheels so arranged in reference to the coulters, that it will work at an equal depth when crossing ridge and furrow, therefore does not draw itself in at the ridge and out at the furrow.

We beg to refer our readers for further particulars of the several implements we have enumerated, to the Catalogue, which we have no doubt may be still obtained at the Society's House, in Hanover-square. We hear of many purchases being made,

e trust that implement makers gene-
have found their order books well
Before passing on to the next part
subject we may be excused again
g the exhibitors the just tribute and
le meed of our praise for the excellent
of the several implements exhibited,
ndering to them on behalf of the far-
f England our best acknowledgment
service they are rendering to the
cause of Agricultural Improvement.

THE COUNCIL DINNER,

place on the evening of Wednesday
really handsome Concert Hall; his
the Duke of Richmond, president
year, took the chair exactly at five
k.
hat hour about 350 gentlemen, con-
with the society sat down to a splen-
ner, provided by the spirited pro-
s of the City of London Tavern. The
air was occupied by Earl Spencer.
s apart from our duties to report after
proceedings, unless of a practical
, we have only to observe that a more
table large dinner it never fell to our
artake of, or one where more perfect
ny and good fellowship prevailed.
ect galaxy of female beauty shed its
from the commodious gallery of the
nd contributed, to the other enjoy-
of man below, the witchery of their
above. But as we before observed,
re matters beside our province: the
ant events relating to stock and im-
nts at all times find a place in our
ns, as being immediately within the
of our duties. We cannot, however,
the proceedings at the

PAVILION DINNER

ss entirely without notice. We
draw attention, in an especial man-
the speeches of the Noble Duke the
an, the Earl Spencer, and the Earl
nsfield. Who, for instance, in read-
at fell from the two former of these
nen, can doubt for a moment their
nxiety to promote the best interests, not merely of every class of the agricultural community, but also of every man in any way connected with our common country. And who can read without emotion the words of the Earl of Mansfield, in acknowledging the toast of the Highland and Agricultural Society of Scotland, and the Royal Agricultural Improvement Society of Ireland,

"They," (in Scotland) observed the noble lord, "had had long experience of the benefits of such a society; they found thousands and tens of thousands of acres had been reclaimed from a state of desolation, and were now teeming with most beautiful crops. Our lands are perhaps more sterile than yours, our climate inferior; so that we felt there was necessity for great exertion, and our energies have rendered us successful. It was with no little interest that we in Scotland regarded the first attempts of this society, and now our care must be that you do not exceed us. But a few days more, and our annual meeting will take place in Scotland. Allow me to offer you there the hospitality which you have afforded us. May I ask you to reciprocate the visit which we have paid you, and to instruct us in some facts where we may be deficient, and perhaps there may be—I do not say there are—some points in which we may instruct you. I do not feel competent to do justice to that part of the toast which relates to Ireland; but if an Irishman is present, I hope he will convey across the channel the expression of regard which this society entertains for them. I hope he will tell them that Englishmen drank prosperity to Ireland; and in the same breath, let him tell them that a Scotchman responded to the toast. From the end of England to the end of Scotland let him assure them, that all feel the greatest interest in Ireland—that we feel we are all one people, and that we hope they will soon become our rivals in all that can advance the physical or moral interests of mankind."

Who does not see in these words, addressed to the people of Ireland, the olive branch of peace? Who does not feel them in all their eloquent force? Who does not respond to the feelings which prompted them? Oh unhappy Ireland, how long is thy fertile soil and genial clime to foster prejudices and force to an unnatural growth passions which tend but to destroy:—at the very moment possibly that this imposing meeting of Britain's Stalwart sons responded with loud cheers to the fraternising sentiments which we have quoted, an aggregation of Irishmen were denouncing the feeling and embittering each other towards "The Saxon," and "The Gael." This sort of anti-national feeling cannot continue: Irishmen must themselves soon see that to be a great nation they must be a united people, united in the firmest bonds—those of self-interest—with the British people, who lose no opportunity, as in the instance above quoted, of holding out to them the right hand of good fellowship. It may suit the self-interested purposes of demagogues to make a stalking-horse of the religious prejudices of the people of Ireland, but we believe the Irish heart beats too warmly in the breasts of her manly sons long to resist the kindly influence of advances such as we have above quoted.

The following is the award of Prizes:—

Short Horns. Class I.—Bulls calved before the 1st of January, 1843.—To Mr. James Banks Stanhope, of Revesby Abbey, near Boston, Lincoln, the 1st prize of £30, for his short-horned Bull, 2 years and 7 months old, bred by Mr. John Parkinson, of Ley Fields, Newark.

To Mr. John Forrest, of Stretton, near Warrington, Cheshire, the 2nd prize of £15, for his pure short-horned Bull, 6 years and 4 months old, bred by Mr. Thomas Forrest.

Class II.—Bulls calved since 1*st of January*, 1843.—To Mr. Capel Hanbury Leigh, of Pont-y-pool Park, near Pont-y-pool, Monmouth, a prize of £20, for his short-horned Bull, 2 years, 5 months, and 16 days old, bred by himself. [This was one of the finest animals in the yard.]

Class III.—Cows in Milk.—To Mr. James Banks Stanhope, of Revesby Abbey, near Boston, Lincoln, a prize of £15, for his short-hored Cow, 4 years and 3 months old, bred by Mr. John Booth, of Kellerby, near Catterick, Yorkshire.

The Judges highly commended Mr. Alexander Bannerman, of South Cottage, near Chorley, Lancaster, for his short-horned Cow, 5 years and 13 days old, bred by Mr. John Booth, of Kellerby, near Catterick, Yorkshire.

The Judges commended The Right Hon. Viscount Hill, of Hawkstone, near Shrewsbury, for his short-horned Cow 7 years old, bred by Mr. Holmes in Ireland.

Class IV.—In-calf Heifers, not exceeding 3 years old.—To the Right Honourable Viscount Hill, of Hawkstone, near Shrewsbury, a prize of £15, for his lordship's short-horned Heifer, 2 years, 9 months, and 27 days old, bred by Mr. R. M. Jacques, of Eastby, near Richmond, Yorkshire.

The Judges highly commended The Right Hon. Viscount Hill, of Hawkstone, near Shrewsbury, for his short-horned Heifer, 2 years, 5 months, and 22 days old, bred by Mr. R. M. Jacques, of Eastby, near Richmond, Yorkshire.

Class V.—Yearling Heifers.—To Mr. Edward Lakin, of Beauchamps Court, near Worcester, a prize of £10, for his short-horned yearling Heifer, 1 year and 11 months old, bred by himself.

Class VI.—Bull calves.—To the Right Hon. Viscount Hill, of Hawkstone, near Shrewsbury, a prize of £10 for his short-horned Bull Calf, 9 months and 12 days old, bred by Mr. Richard Almond, of Orrell, near Wigan, Lancashire.

Herefords. Class I.—Bulls calved previously to January 1, 1843.—To Mr. Thomas Sheriff, Coxall, near Brampton Brian, Hereford, 1st prize of £30 for his Hereford Bull, 5 years 6 months and 21 days old, bred by himself.

To Mr. Edward Gough, of Gravel-hill, near Shrewsbury, the 2nd prize of £15, for his Hereford Bull, [illegible] years and 7 months old, bred by the late Mr. Edward Gough, of Gravel-hill.

The judges highly commended Mr. William Eyton, of Gonsal, near Shrewsbury, for his Hereford Bull, 4 years and 6 months old, bred by the late Mr. John Morris, of Stockton, Leominster.

Class II.—Bulls calved since January 1, 1843.—To Mr. Edward Urwick, of Felton, near Ludlow, Salop, a prize of £20 for his Hereford Bull, 1 year and 7 months old, bred by himself.

Class III.—Cows in milk.—To Mr. J. N. Carpenter, of Eardisland, near Leominster, Hereford, a prize of £15, for his Hereford Cow, 3 years 8 months and [illegible] days old, bred by himself.

Class IV.—In-calf Heifers not exceeding 3 years old.—To Mr. J. N. Carpenter, of Eardisland, near Leominster, Hereford, a prize of £15 for his Hereford In-calf Heifer, 2 years 7 months and 24 days old, bred by himself.

The judges *highly commended* Sir Francis Lawley, Bart., of Middleton-hall, near Fazeley, Warwick, for a Hereford In-calf Heifer, 2 years and 7 months old, bred by himself.

Class V.—Yearling Heifers.—To Mr. Thos. [illegible] Meire, of Cound Arbor, near Shrewsbury, a prize of £[illegible] for his Hereford Yearling Heifer, 1 year and 6 months old, bred by himself.

he judges ***highly commended*** Mr. James Corbett, of Sheriffs, Lyonshall, near Kington, Hereford, for his reford Yearling Heifer, 1 year 10 months and 25 days l, bred by himself.

he judges commended Sir Francis Lawley, Bart., of ddleton-hall, near Fazeley, Warwick, for a Hereford arling Heifer, 1 year and 11 months old, bred by nself.

lass VI.—Bull Calves, not exceeding 12 *calender nths old.*—To Mr. John Thomas, of Cholstrey, near ominster, a prize of £10 for his Bull Calf, 10 months l. bred by himself.

he judges ***highly commended*** Mr. Thomas Lockley ire, of Cound Arbor, near Shrewsbury, for his Here- d Bull Calf, 9 months old, bred by himself.

he judges ***commended*** Mr. Thomas Lockley Meire, Cound Arbor, near Shrewsbury, for his Hereford Bull lf, 8 months old, bred by himself.

evons. Class I.—Bulls calved previously to Jan. 843.—To Mr. Thomas White, Fouracre, of Durston, r Taunton, the prize of £30 for his Devon Bull, 4 rs and 7 months old, bred by Mr. W. Stace, of Dul- ton, Somerset. [The only animal of its class shown.]

lass II.—Bulls calved since 1*st of January* 1843.— Mr. James Quartly, of Molland, near South Molton, on, a prize of £20 for his Devon Bull, 2 years and 5 ths old, bred by himself, [The only animal of its shown.

ass III.—Cows in milk.—To. Mr. Quartly, of and, near South Molton, Devon, a prize of £15 for Devon Cow, 6 years and 3 months old, bred by elf. [The only animal of its class shown.]

ass IV.—In-calf Heifers, not exceeding 3 *years old.* Mr. George Turner, of Barton, near Exeter, Devon, ze of £15 for his pure North Devon in-calf Heifer, ars and 6 months old, bred by himself. [The only al of its class shown.]

ass V.—Yearling Heifers.—To Mr. George Turner, arton, near Exeter, Devon, a prize of £10 for his North Devon yearling Heifer, 1 year and 6 months bred by himself.

ass VI.—Bull calves.—To Mr. George Turner, of on, near Exeter, Devon, a prze of £10 for his pure h Devon Bull Calf, 7 months and 2 weeks old, bred imself. [The only animal of its class shown.]

attle of any breed. Class I—Bulls calved before uary 1; 1843.—To the Hon. M. W. B. Nugent, of ham Grange, near Hinckley, Leicestershire, a prize 15 for his pure Leicester or long-horned Bull, 4 years 4 months old, bred by Mr. Slingsby, of Foleshill , near Coventry.

Mr John Lees Brown, of Farewell, near Lichfield, ord, a prize of £10 for his pure long-horned Bull, 3 and 6 months old, bred by himself.

ase II.—Bulls calved since January 1, 1843—No awarded.

ase III.—Cows in milk.—To the Hon. M. W. B. nt, of Higham Grange, near Hinckley, Leicestershire, a prize of £15 for his pure Leicester or long-horned Cow, 10 years old, bred by Mr. Gibbs of Henley in Arden.

Class IV—In-calf Heifers.—To the Hon. M. W. B. Nugent, of Higham Grange, near Hinckley, Leicestershire, a prize of £10 for his pure Leicester, or long-horned Heifer, 2 years 10 months and 18 days old, bred by himself.

Class V.—Yearling Heifers.—To the Hon. M. W. B. Nugent, of Higham Grange, near Hinckley, Leicestershire, a prize of £10 for his pure Leicester or long-horned Yearling Heifer, 1 year and 9 months old, bred by himself.

Horses. Class I.—*Stallions for agricultural purposes.* —To Mr. Henry Crosse, of Boyton Hall, near Stowmarket, the 1st prize of £30 for his Cart Stallion, 9 years old, bred by the late Mr. William Crosse, of Little Finborough Hill, Suffolk.

To Mr. Hillyer Reeve, of Wroughton, near Swindon, Wilts, a prize of £15 for his Cart Stallion, 6 years old, bred by Mr. Henshaw, of Ayston, Derbyshire.

The judges ***highly commended*** Mr. Henry Allen, jun., of Oakfield House, near Hay, Brecon, for a Cart Stallion 6 years old, bred by Colonel Wood, M.P. of Littleton, Middlesex.

[No prizes were awarded in Class II.]

Class III.—To Mr. Frederick Thomas Bryan, of Knossington near Oakham, Rutland, a prize of £15 for his Cart Stallion, 2 years old, bred by Mr. Richard Brown, of Elsworth, Cambridgeshire.

Class IV.—*Cart mares and foals.*—To the Right Hon. Viscount Hill, of Hawkstone, near Shrewsbury, a prize of £20 for his Cart Mare and Foal; the Mare bred by the late Viscount Hill, of Hardwicke Grange, Salop; Sire of Foal belonged to his lordship.

To Mr. George Townshend, of Sapcote Fields, near Hinckley, Leicester, a prize of £10 for his Cart Mare and Foal; Sire of Foal belonged to Mr. Hipwill, of Swinford, Leicestershire.

Class V.—*Two-year-old fillies.*—To the Right Hon. Lord St. John of Melchbourne, near Kimbolton, Bedford, a prize of £10 for his two-year-old Filly, bred by his lordship.

Class VI.—*Thorough-bred stallions.*—To Mr. J. B. Minor, of Astley House, near Shrewsbury, a prize of £30 for his thorough-bred Stallion, 9 years old; was got by Sultan, dam Clara, by Filho-da-Puta, bred by the Hon. Sidney Herbert, of Wilton House, Wiltshire.

Sheep. Leicester. Class I.—*Shearling rams.*—To Mr. T. E. Pawlett, of Beeston, Biggleswade, Beds, the prize of £30 for a Leicester Ram, 16 months old, bred by himself.

To Mr. Samuel Bennett, of Bickerings Park, near Woburn, Bedford, the prize of £15 for a pure Leicester Ram, 16 months old, bred by himself.

Class II.—*Rams of any age above 2 years.*—To Mr. Robert Burgess, of Cotgrove Place, near Nottingham, the prize of £15 for a pure Leicester Ram, 41 months old, bred by himself.

To Mr. Robert Burgess, of Cotgrove Place, near Nottingham, the prize of £30 for a pure Leicester Ram, 65 months old, bred by himself.

Class III.—*Shearling ewes.*—To Mr. John Gregory Watkins, of Woodfield, near Worcester, the prize of £10 for a pen of 5 pure Leicester Shearling Ewes, 16 months old, bred by himself.

To Mr. George Turner, of Barton, near Exeter, Devon, the prize of £5 for a pen of 5 Leicester Shearling Ewes, 16 months old, bred by himself.

South Downs. Class I.—*Shearling rams.*—To Mr. Jonas Webb, of Babraham, near Cambridge, the prize of £30 for a Southdown Ram, 16 months old, bred by himself.

To His Grace the Duke of Richmond, of Goodwood, near Chichester, Sussex, the prize of £15 for a Southdown Ram, 16 months old, bred by his Grace.

Class II.—*Rams of ang age above 2 years.*—To His Grace the Duke of Richmond, of Goodwood, near Chichester, Sussex, the prize of £30 for a South-down Ram, 28 months old, bred by His Grace.

To Mr Stephen Grantham, of Stoneham, near Lewes, Sussex, the prize of £15 for a South-down Ram, 40 months old, bred by himself.

Class III.—*Shearling ewes.*—To His Grace the Duke of Richmond, of Goodwood, near Chichester, Sussex, the prize of £10 for a pen of 5 Southdown Shearling Ewes, 16 months old, bred by His Grace.

To Mr. D. Barclay M.P., of Eastwick Park, near Leatherhead, Surrey, the prize of £5 for a pen of 5 Southdown Shearling Ewes, 16 months old, bred by himself.

Long-woolled sheep not qualified to compete in other classes. Class I.—*Shearling rams.*—To Mr. Edward Handy, Sevenhampton, Andoversford, Gloucestershire, the prize of 30*l.* for an improved Cotswold Ram, 16 months old, bred by himself.

To Mr. Charles Large, of Broadwell, near Lechlade, Gloucestershire, the prize of 15*l.* for a new Oxfordshire Ram, 16 months old, bred by himself.

Class II.—*Rams of any age above 2 years.*—To Mr. E. Handy, Andoversford, Gloucester, the prize of 30*l.* for an improved Cotswold Ram, 40 months old, bred by himself.

To Mr. Edward Smith, of Charlbury, near Enstom, Oxford, the prize of 15*l.* for a Long-woolled Oxfordshire Ram, 64 months old, bred by himself.

Class III.—*Shearling ewes.*—To Mr. Charles Large, of Broadwell, near Lechlade, Gloucester, the prize of 10*l.* for a pen of 5 new Oxfordshire Long-woolled Ewes, 16 months old, bred by himself.

To Mr. Edward Smith, of Charlbury near Enstom, Oxford, the prize of 10*l.* for a pen of Five Long-woolled Oxfordshire Ewes, 16 months old, bred by himself.

Sheep adapted for mountain districts.—Class I.—To Mr. John Robson, of East Kielder, near Hexham, Northumberland, the prize of 15*l.* for a Cheviot Ram, 3 years and 3 months old, bred by himself.

To Mr. John Robson, of East Kielder, near Hexham, Northumberland, the prize of 10*l.* for a Cheviot Ram, 4 years and 3 months, old, bred by himself.

To Mr. John Robson, of East Kielder, near Hexham, Northumberland, the prize of 5*l.* for a Cheviot Ram, 2 years and 3 months old, bred by himself.

Class II.—*Pen of five ewes of any age.*—To the Right Hon. Lord Bagot, of Pool Park, near Ruthin, Denbigh, the prize of 10*l.* for a pen of Five Cheviot Mountain Shearling Ewes, 14 months old, bred by his lordship.

Pigs. Class I.—*Boars of a large breed.*—To Mr. Moses Cartwright, of Stanton House, near Burton-on-Trent, Stafford, the prize of 10*l.* for a Boar, 1 year and 6 months old, bred by himself.

To Mr. Charles Randell, of Chadbury, near Evesham, Worcester, the prize of 5*l.* for an Essex enlarged Boar, 2 years 3 months and 21 days old, bred by himself.

Class II.—*Boars of a small breed.*—To the Right Hon. Viscount Hill, of Hawkstone, near Shrewsbury, the prize of 10*l.* for a Boar, 1 year and 22 days old, bred by his lordship.

To Mr. Edward Urwick, of Felton, near Ludlow, Salop, the prize of 5*l.* for an Essex Boar, 1 year and [illegible] months old, bred by Mr. Henry Quihampton, of Little Totham, near Maldon, Essex.

Class III.—*Sows of a large breed.*—To the Right Hon. Viscount Hill, Hawkstone, near Shrewsbury, the prize of 10*l.* for a Leicestershire Sow, 3 years and 1 month old, bred by Mr. W. Houghton, of Parbold, Lancashire.

Class, IV.—*Sows of a small breed.*—To Mr. William Fisher Hobbs, of Marks Hall, near Kelvedon, Essex, the prize of 10*l.* for an improved Essex Sow, 7 months old, bred by himself.

Class V.—*Pens of breeding sows.*—To Mr. William Fisher Hobbs, of Marks Hall, near Kelvedon, Essex, the prize of 10*l.* for an improved Essex Sow, 7 months old, bred by himsef.

Extra stock.—*Beasts.*—To Mr. W. Taylor, of the Dyffryd, near Llanymynach, Shropshire, a prize of [illegible] for a fat Hereford Heifer, 4 years and 4 days old, bred by Mr. Richard Hill, of Golding Hall, Salop.

To Mr. Jacob Brown, of Shrewsbury, a prize of 3*l.* for a Hereford Calf, 11 months old, bred by Mr. Edward Humphreys, of Walcot, near Cherbury, Salop.

Horses.—To Mr. Turner, Pool Park, near Ruthin, Denbigh, a prize of 5*l.* for a Welsh Mountain Stallion Pony, 4 years old, bred by Mr. Wynne, of [illegible] Merioneth.

Sheep.—To Mr. Charles Large, Broadwell, near Lechlade, Gloucester, a prize of 5*l.* for a new Oxfordshire long-woolled Ewe, 4 years and 4 months old, bred by himself.

To Mr. John Gregory Watkins, of Woodfield, near Worcester, a prize of 2*l.* for his pure Leicester Ewe, with her Lamb, 5 years and 4 months old, bred by himself.

An Enemy Subdued.—I heard of an in-ance that occurred in an adjoining parish, a years ago, which I think exemplified, in a easing way, the good that resulted from acting peace principles. It was this:—Two small mers, from some cause or other, were at riance. One of them had some sheep diseased h the scab, which he put into a field next his ghbour's, who became very uneasy from a r that his sheep would be infected with the order; but he was on too ill terms to speak him about it, but consulted with another rson. This person advised him to cure the eep, and then he would effectually protect own. He was wise enough to take good unsel, and accordingly set himself to work. hile he was about it, his neighbour came, and ing what he was doing with a view to heal e sheep, he joined him in the operation. ey became at once good friends, and all their mer enmity was done away by one act of dness, which melted the heart, and produced e and good will.—*Peace Advocate.*

Reviews, &c.

actical Hints on Land Draining. By C. Newman. London, J. Ridgway & Sons.

s little work is well worthy the few urs reading which it will require. The thor is a practical man, and as such serves to have his opinions treated with t respect to which the opinions of all n of his class are entitled. With those nions, as a whole, we are happy to say coincide. There are individual in-nces, however, where we differ with our hor, but we do so without at all assuming urselves that we are right and that he rong. At many of his conclusions we e long since arrived, and the country, by the legislature, will not be long in owing us to them. The leading differ-es between us may be easily summed

Our author is for drains of 30 inches p; we are for 4 feet. Mr. N. observes:

Many persons are of opinion that deep ining is preferable; this may apply very judiciously to land containing springs, but I cannot conceive that it is necessary to incur the extra expense of such deep drainage, on land requiring only the surface water carried off. I am of opinion that thirty inches is quite sufficient for such purpose, at which depth the drains will be quite secure from the subsoil plough. In order to elucidate my views, and form an estimate of the expense, I will calculate at a standard depth of thirty inches on arable, and twenty-four on pasture land.

"We next come to the distance drains should be set out, which must of necessity depend on the nature of the soil; if a strong tenacious clay, from fifteen to eighteen feet; if a more porous soil, from twenty-four to thirty feet.

"To carry out an effectual drainage, I should recommend, on the heavy clays, to drain at fifteen feet distance, and on the more porous soil, twenty-four feet; experience having convinced me, that, by endeavouring to save the expense of a few drains in a field, much injury is often incurred, and as it will occasionally happen that a drain may not act properly, the next to it will in such cases carry off the water; and it is evident that the nearer the drains are, the greater will be the facility in carrying off the surface water, and the greater the benefit to the land.

"Although I have drained the farm I occupy at twenty-eight feet, I am of opinion that twenty-four feet would have been more desirable, for the reason before stated; with these impressions, I therefore recommend on a heavy loam, of which my land consists, that distance."

Now it appears to us that the distance between the drains has more to do with the depth of them, and the depth is more immediately dependent upon the distance between them than it appears to us our author is aware. He, however, assumes that a depth of 30 inches is sufficient, and a frequency of 18 to 24 feet; and upon these he founds his calculations. With reference to the first step in draining, viz., laying out the drains, our author's recommendations cannot be too frequently reiterated or too indelibly fixed upon the attention of all who have any intention to drain.

"*I should observe,*" *says he* "*that it is highly necessary, previous to commencing the work, to be particular in having a person of experience to set out the line of drains, and take the proper levels.*"

Our author, in estimating the cost of draining, quotes the prices of tiles as under:—

"I am doubtful as to the durability of the one-and-a-half inch pipe tile; at all events they will require great caution in laying: if the bottom of the drain should be soft, the pressure would force them down, and the bore being small, they would soon cease to act,—by the same rule, it would be a risk to use them on land that had not a tolerable fall, as it frequently will occur on flat land that a trifling obstruction prevents the current, consequently the bottom of the drain, if on a loam or clay, might become soft: such tiles are certainly desirable for economy, but if unsafe it will be far better to use the tiles with soles. I must confess I have had no experience with such small pipes, I merely state it as my opinion that they would be liable to fail; in fact, I have proof that it is an injudicious plan to use tiles without soles on land which has but little fall. I had a field drained with tiles altered, and adopted the subsoil system instead; several of the drains had become useless by the tiles sinking in the ground. At all events, if the small ones are used, I should advise commencing the drain with them for about twenty poles, and, as the water increases, to use the second size the same distance, and then the three-inch, by which means the liability of a stoppage may be avoided. I find the prices at the Uxbridge kiln are, for pipe tiles, first size 30s.—second 37s. 6d.—and third 70s.; having recommended them to be used together, they will collectively amount to £2 5s. 10d. per thousand. The price of the tiles with soles, at the same kiln, is £2 12s. 6d. giving a difference in favour of the former of 6s. 8d. per thousand. If it should prove that the pipe tiles are equally secure, there will also be an advantage by having less earth to take out for them, consequently the expense will be reduced accordingly."

With reference to the danger of using pipe tiles we quite agree with our author; unless they can be firmly bedded on a very solid clay we certainly would not ourselves use them.

We do not agree with our author in hi recommendation of plug or what he cal subsoil draining, which is in effect subsi tuting an unburnt tile for one which h undergone that process; and though w admit there is a more economical differenc in the cost of the two operations than i occasioned by the mere process of burni the tiles, yet we are satisfied that tile draining is the cheapest process.

Our author next sets out the advantag resulting from draining, having collect some valuable authorities upon the subjec

Amongst the many cases instanced b Mr. Newman, of the advantages of drai ing, &c., he quotes from vol. 2 of the Roy Society's Journal those of Mr. Denis the Rev. Mr. Croft, the Marquis of Twee dale, and Lord Hatherton, at Tedde Hay; and as though this were not enou he goes on to the 3rd vol. of the Roy Society's Journal, and quotes Mr. Pusey Lord Stanley, and Lord C. Russell.

At page 27 Mr. Newman thus sums u his case, by affording us a few more of th advantages of draining:—

"An effectual drainage may in truth be co sidered to the landed proprietor a new crea source of wealth, improving the land from 10 20 per cent. (on an average, say 15 per ce although I have shewn a much greater incre and, as before observed, such wealth is pri pally produced by manual labour, which wh it enriches the proprietor offers to the labo a similar advantage, giving him beneficial e ployment whereby he may earn his livelih rendering himself and family happy. T tenant will also participate in the benefit, havi a greater security in the investment of h capital, by the removal of the stagnant wa which to him often proves a serious loss. I wet seasons, the land being continually saturated tends to weaken and destroy, to a serious extent the vegetable quality of the soil so essential ion. When the spring arrives, and eeming forth with all its vigour, tible are its baneful effects! the very the productive soil carried away by s which were made to convey the ter. Indeed, how often is it observ- field has been well manured, that a on of the valuable properties run off me course. Land, when drained, very different appearance after a rain, when the earth has absorbed noisture, the surplus water gradually ough the subsoil, leaving all those roperties in the soil by which the nts are nourished and brought to per- nd, as early sowing in the spring is tageous, land which has been drained state to receive the seed two or three ier; the corn will subsequently pro- ring the surface so as to withstand the ys of the sun, which often prove too for late sown corn. Draining also e land much easier of tillage, by nsiderable saving is effected in horse h the plough and harrow.

mportant to know, also, that the land cially improved that green crops may with greater facility, and thereby at beef and mutton. Considerable will likewise result from the reduction s, which I have shewn will be only in the same proportion as the drains; ently the original furrows may be into a productive soil. The same ll accrue to pasture, giving the grazier ble opportunity of feeding beasts on h, in its natural state, would be unsafe heep upon, in consequence of their o rot.

so improved by drainage will carry east two months extra in the year, and ge will likewise be much improved; so be gratifying to know that, by an n the produce of the soil, there will be al increase in the demand for labour; te will also be improved by an effectual —the natural result must be the im- t in the health of the inhabitants in such districts, and especially that of the labourers who are more exposed to the unhealthy influence of damp and fog, and the effluvia of stagnant water, pregnant with agues, fevers, and other diseases. With such impressions, I have frequently made the following comparison on viewing a field effectually drained and a field undrained; the one looking healthy and vigorous, like a person with a good constitution, enabled to encounter change of weather however unfavourable,—the other carrying an unhealthy appearance, a different cast of countenance, and chilled with the wet, producing an appearance similar to a person fast approximating to a consumption. To a certain extent, this simile will apply to land which is continually wet, and which becomes so compressed with the weight of water that it is rendered incapable of admitting that free intercourse with the air which is so necessary to promote vegetable life; such land will also suffer to a greater extent in a season of drought, being robbed of its fructifying powers. The growing crops, on land of this description, in the month of May, will too frequently prove this fact, when compared with a well drained field, on which the crops look promising and in a healthy state, like the land on which it is growing, where no exhaustion has been effected by water, and where the pores, which may be designated the lungs, are in a high state of perfection to receive the free intercourse of atmospheric influence."

Our author then proceeds to point out by whom this important work should be undertaken; and those of our readers who would wish to learn his views upon this very interesting question cannot do better than consult the work itself: they will find it pleasantly written, and very much to the point.

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The Veterinarian for July. London, Longman and Co.

THIS useful periodical contains in the last number the following, on the "*Rupture of the Aorta* (first large artery from the heart) *in a Horse*," by Mr. W. A. CARTWRIGHT, M.R.C.V.S., Whitchurch, Salop:—

"On the 3d April, 1845, I was sent for by Edward Eyton, Esq., of Marbury Hayes, to examine a half-bred horse that had died suddenly the previous night.

The horse belonged to G. Harper Esq., of this town, and had been lent to Mr. Eyton to do a little work. He was about 15 years old, 16 hands high, in good condition, and to all appearance, perfectly sound.

On the morning of the 2d instant a groom led him and another horse, whilst riding a third, to Mr. E.'s, a distance of four miles. During the journey thither he was sometimes walked and at others trotted, and on arriving there he sweated a little. He continued in the stable the whole of the day, was put into a separate stall, and had every care taken of him. Between eight and nine at night he was supped up with the other horses, and then seemed perfectly well, and was left eating.

Some cold water was brought to him when he was supped up, but of which he drank but little. From this time he was left for the night, without being seen again. Between four and five o'clock the next morning the servant men where in attendance upon the cart horses, and, to their great surprise, found this horse dead behind them. It is highly probable, previous to death taking place, that he had been violently struggling and staggering about, as a bar that separated the stall from the other horses and a greater part of the stall itself were forced down, and the head collar was also off his head. None of the other horses were in the least injured.

Examination.—The mucous membrane of the small intestines was a good deal inflamed. The stomach was moderately filled with food, and was perfectly healthy; and it was very evident that, at the time of death, digestion was going on in a natural state. There were no bots in the stomach, or at the entrance into the duodenum, (first of small bowels.)

I next laid open the thorax (chest,) and found the lungs highly congested; the trachea (windpipe) was also violently inflamed inside.

I was very much struck with the size and appearance of the pericardium (covering of the heart,) which was considerably larger than usual, and of a dark blue colour. I immediately laid it open, and found that it contained about two quarts of bloody serum (watery fluid) and dark coagulated blood, in about equal proportions. There was none of the buffy coat intermixed with it. It was now very evident that a rupture of some bloodvessel had taken place within the pericardial sac (heart purse,) and on removing the blood it was seen whence it proceeded, as there were stringy portions of the coagulated parts hanging out from a cavity leading towards the origin of the aorta, and close up to the heart. I introduced my finger therein, which went directly into the aorta. On opening it, I was surprised in scarcely finding a vestige of disease in its coats: its inner membrane was beautifully smooth, and of a natural colour, and the whole of its substance was n at all thickened; in short, there was nothing more than an opening into it that one could ju pass one's finger through, and which was su rounded by portions of loose thin membra that had covered the opening.

It appears to me that a circular portion of th aorta, of about half an inch in diameter, had, excepting a very thin covering on its outer side, become absorbed, without implicating the adjoining parts by any adhesions or depositions.

Since this horse died, another valuable hal bred horse, belonging to the same person, w found dead in the field, but I did not see hi opened."

The writer's conclusion as to the ca of death may be correct, but is it not po sible that the rupture of the aorta ma have been in consequence of the struggl which, from some cause or other, the a mal made? Two facts are before us, vi that he must have struggled violently, a that he ruptured the aorta: whether th struggles caused the rupture, or the ruptu the struggles, it is hardly possible to s The writer is no doubt correct as to th immediate cause of death, but of the pro mate there appears to us much dou Something may have got wrong with th halter, and he in consequence struggl which struggling may, we apprehe have caused the rupture. From the f of this case we see how carefully ho should be looked to as to their halters, Strangulation, as we all know, often occ from the same causes.

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Alströmerias.—We have now in bloo bed, 50 feet in length and 2½ feet in width, Alströmeria aurantiaca, the flower-stems va ing from 2 to 3 feet in height, and with fro to 15 blossoms on each. It is literally one of bloom. This bed was planted in 183 gravelly loam, and has bloomed every year most luxuriantly, without any protection; situation is rather moist, being about 5 above the level of a stream.—*J. & H. Hay*
Victoria Nursery, Cork.

CORRESPONDENTS.

ur correspondents an apology for
favours as are unavoidably postponed
h. The length to which our report
neeting of the Royal Agricultural
un has left us no room for (amongst
the report of the late meeting of the
armers' Club; the late numbers of
d Highland Societys' Journals; "an
ce of the present state of the wheat
nd," an important and highly inte-
; and other contributions.

The Markets.

is late, and the weather anything
s. From many districts we hear of
wheat plant, and that upon heavy
as shewn itself freely. At Mark
25th ult. reports were current of the
s they were ascribed to the trade
n was given to them. It is however,
too true that the average yield of
be lower, taking into consideration
f land sown, than last year. The
made in a former number, as to the
condition of the crops in various
ountry, is confirmed by our reports,
e then, that the wheats are better in
counties, particularly in Lancashire
, than in the south. How far how-
hich is said to prevail, and rust,
w prevails in certain districts, will
eturns, time alone, which will expose
f the mischief, can determine. A
lendid ears now lies before us which
ple of the state of the crop apon a
in Cheshire, which would otherwise
we have examined them closely, and
lf the grains affected with rust; and
ssured, is not by any means the worst
might have been collected from other
ame district. These reports, added
the weather, have caused an upward
prices at all the leading markets in
: the total rise, however, amounts to
about 4d. to 6d. per bushel.—BAR-
tle demand, and the samples offering
prices remain, therefore, stationary.
also quoted at former rates; corn, of
, maintaining its value.—BEANS *are*
ut they are comparatively unnoticed.
uoted a turn lower, the supplies hav-
e at the principal markets.—MUT-
he scarcity in some markets and the
others, is a fluctuating article: the
er, are everywhere, for these as well
riptions of animal food, higher than
sponding period of last year.—The
in London which have taken place since our last have passed off well, the bidding being brisk and the prices well supported. The accounts from the manufacturing districts are also very favourable.—CHEESE *is an improving article, and still better prices are anticipated, the Dutch costing the importers 43s. to 44s. landed here, and no prime American being in the market. This augurs well for the demand for incalf beasts or those recently in profit, independently of the country being full of grass.*—HOPS *are reported upon variously; in some cases mould and vermin have made their appearance, in others again the hopes of the planters are high. The duty is pretty generally estimated at* £180,000.

LONDON, July 28.		Per	Qr.
WHEAT, Essex and Kent, new, red	56	58	60
White		62	66
White, old		62	66
RYE, old		32	34
New		36	—
BARLEY, Grinding		28	30
Malting		30	32
Chevalier		33	—
Irish		24	26
Bere		25	—
MALT, Suffolk and Norfolk		58	63
Brown		56	60
Kingston and Ware		60	—
Chevalier		65	—
OATS, Yorksh. & Lincolnsh., feed		23	24
Potatoe		24	26
Youghall and Cork black		20	21
Cork, white		22	—
Dublin		21	22
Black		21	22
Scotch feed		24	26
Potatoe		25	28
Limerick		22	24
BEANS, Tick, new		38	40
Old, small		40	42
PEAS, Grey		38	40
Maple		38	40
White		38	40
Boilers		38	40
SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.			
Mustard, White		12	15
Brown		10	12 per bush.
FLOUR, Town-made		51	—
Suffolk		42	— per sk. of 280 lbs.
Stockton and Norfolk		40	42

FOREIGN GRAIN AND FLOUR IN BOND.			
WHEAT, Dantzic		46	50
Hamburgh		38	—
Rostock		42	44
BARLEY		19	23
OATS, Brew		17	18
Feed		14	17
BEANS	—	28	29

Peas	28	32
Flour, American, per barrel	24	—
Baltic	21	—

LONDON AVERAGES.

Wheat	5589 qrs.	£2	15	0
Barley	114	1	7	1
Oats	26600	1	2	3
Beans	1021	2	1	8
Peas	130	1	18	0
Rye	28	1	11	6

SEED MARKET.	s.		s.
Canary, per qr.	44	to	48
Carraway, per cwt.	44	to	48
Clover, red, English	45	to	50
„ „ Foreign	40	to	48
„ white, English	60	to	62
„ „ Foreign	50	to	62
Coriander	12	to	18
Hempseed, per last	35	to	36
Linseed Cakes, Eng. p. 1000 £11	to	£11	5s.
„ „ Foreign, p. ton £7 7s.	to	£7	10
Mustard, white, per bushel	10	to	14
„ superfine „	12	to	16
„ brown „	12	to	16
Rapeseed, English, per last	£26	to	30
Tares, English, spring p. bushel.	4s 0d	to	6
Foreign „ „ „	3s	to	5

LIVERPOOL, July 26.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℘ 70lbs	7	8	8	0
Ditto, red	7	6	7	9
Irish white, new	7	0	7	7
Egyptian	5	9	6	0
Oats, Eng. mealing, ℘ 45lbs.	3	2	3	6
Irish	2	10	3	0
Welsh	2	9	2	10
Barley, Eng. malting ℘ imp. qr.	29	0	31	0
Grinding	0	0	0	0
Irish and Scotch	4	0	4	9
Rye, per imp. qr.	32	0	34	0
Beans, English, per imp. qr.	38	0	40	0
Irish and Scotch	36	0	38	0
Foreign	38	0	40	0
Egyptian, per 480lbs.	34	0	35	0
Peas, English, per imp. qr.	38	0	41	0
Foreign	35	0	38	0
Canadian	35	0	36	0
Malt, per imp. qr., fine	60	0	62	0
Flour, English, per 280lbs.	39	0	42	0
Irish	37	0	40	0
Foreign, duty-paid, per 190lbs., U.S.	27	0	29	0
Canadian	27	0	28	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	24	6	25	0
Irish	23	6	25	0
Indian Corn, ver 480lbs.	27	0	30	0

PRICE of AGRICULTURAL PRODU

Liverpool, July 26.

			Potatoes.	s.
Hay, best p.st.	1s	1½	Short tops	1
Clover ditto	0	0	Red apple	0
Green ditto	0	3½	Cups	1
Vetches	0	3	Cattle	1
Straw.			Turnips pr ton	26
Wheat	0	6½	Carrots	37
Oat	0	6½	Manure	7
Barley	0	7		

Cattle Markets.

LONDON, SMITHFIELD.

July 28, 1845.	℘ st. of		
	s.	d.	
Inferior coarse beasts	3	2	to
Second quality do.	3	8	to
Prime large Oxen	4	0	to
Prime Scots, &c.	4	4	to
Coarse and inferior Sheep	3	6	to
Second quality do.	4	0	to
Prime coarse woolled do	4	6	to
Prime Southdown do	4	10	to
Large coarse calves	3	6	to
Prime small do	4	6	to
Large Hogs	3	0	to
Neat small Porkers	3	10	to

LIVERPOOL, July 28.

	s.	d.
Beef, per ℔.	0	6
Mutton	0	6
Lamb	0	6

MANURES.

Subjoined are the prices of several so of manure :—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. per c
Guano, 10s. to 12s. per cwt., accordi quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. per landed and housed, 38s. to 42s. per
Nitrate of Soda, 16s. 0d. (duty pd.) per c
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per p sufficient for three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 6s. per cwt.
Compost, £3. 12s. 6d. per hhd. sufficie three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphuric Acid, 1½d. per ℔.
Sulphur for Destroying Worm on Turnip per cwt.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

SEPTEMBER—1845.

; month's article on the subject of ısurance, has produced from Mr. the manager of the *Agriculturist ısurance Company*, a lengthy article ırt of the proprietary plan of insu- ı preference to the mutual. We last month an instance of the ad- of the mutual system as evidenced orking of the Tarvin Society. We ever, by no means blind to the ad- ı of the proprietary.

◆

'e noticed in another column the ı which we have received of the unfitness of the weather for harvest ns. Not only is the ingathering ı be difficult, but the crops are every :eported light, and far below an yield. The causes for this are to d, firstly, in the blight and rust nade their appearance soon after ıt had blossomed; and, secondly, ɔntinued heavy rains, which have crops so that the grain has not

laints have reached us that in some ıe combined operations of blight, l rain, have had the effect of redu- anticipated yield full two-thirds. ıit that the foregoing remarks apply ıll crops more especially than the es; for where the plant is thin upon ınd it has not been, as was to be expected, so much *laid*—the grain therefore is better fed; the thin plants have, however, suffered from rust, and in some districts from blight also. The weather has been more propitious for the harvest in the southern than in the northern counties, still we can come to no other conclusion from a consideration of the whole question, than that the yield of wheat for England will this year fall short of an average. The accounts of the harvest from the various corn-growing states of Europe differ materially—from some places the weather is reported to be to the full as bad as our own, whilst from others the harvest is proceeding most favorably. Upon the whole then we are of opinion that, looking at the falling off, which we are assured there will be in England,—the precarious state of the weather in some parts of the continent, and the rising of the American markets, that prices will not sink *very* low even upon the coming in of the new grain, a conclusion the very reverse of that to which three months ago we should have arrived.

Deprecating as we do an extravagant rise in prices, we cannot express the gratification we feel at what appears to us the extreme probability that the British farmer, on whom our best wishes always centre, will not have to contend at the same time with low prices and a low average produce.

SUGGESTIONS FOR DISCUSSION

AT THE ANNUAL MEETINGS OF AGRICULTURAL SOCIETIES.

As the time is now approaching for the annual assembly of agricultural societies, and since, through these, discussions may be originated and truth elicited on subjects of the highest importance, not only to the owners, but to the cultivators of the soil, I beg to direct attention, through you, to certain leading points, which may be of use to the interests of both. It appears to me that the use of land is two-fold, as a pecuniary investment, and bringing for capital expended an adequate and remunerative return; and further, as being the means, through improved management, of bettering the condition of the landlord, tenant, and labourer.

As to the former, I believe it is capable of being made one of the best speculations going, and that the failure hitherto has arisen from the very miserable system of farming that has for a long time prevailed, and from the old worn-out instruments we have had to work with. In your last number, a plan was fully, and I may say satisfactorily, detailed, in which such landed proprietors, as might not wish to incur a large expenditure in the first outlay, might, through a joint stock company, prosecute that which is doubtless the basis and ground work of every improvement, a judicious and extensive draining of their estates. This improvement applies both to land under the plough and in grass; but if I might hazard an opinion, it is still more material to the former than to the other; not only because from that a much larger return may be extracted, but likewise because the nature of the soil becomes completely altered by it, it is rendered friable instead of being stiff and adhesive; it may then be worked at nearly all seasons; the fallowing system may be dispensed with, and thus a much larger profit may be obtained.

Of the two modes of cultivation, the one grass, and the other arable, Leicestershire exhibits the most perfect specimen as to the former, and certain parts of Scotland as to the latter. With us there are certain grazing districts, which have been cultivated in that way time immemorial, and which it might therefore not be desirable to have converted all at once into an arable state; yet it might be a question, whether by degrees approaches should not be made towards it, according as knowledge becomes more enlarged on the subject, and facilities are obtained to carry it into execution. After setting aside local advantages, such as being near a large market town, the highest rent for the best grass land cannot much exceed £2 the acre; much of our's will not bring one-half of that; but in Scotland double that rent is paid from the land which is entirely under the plough. I believe it was in your paper that I read, some time ago, that a farm near Dunbar, belonging to Mr. Hay, of 450 statute acres, let for £2800 a year; and likewise that a Scotch landowner near Howick, on renewing lately with his tenant for a new term, received £100 a year more rent, and was informed by him that he had made £80[illegible] during his term. Is this the case with any of our tenants? The reason of this is very apparent. Not only are the people there in general more highly educated, and therefore more capable of succeeding in any undertaking, scientific or practical, but agriculture holds there a higher place in rank and estimation than it does with us. The common farmer here ranks below the manufacturer, but there above him. The younger sons of men of fortune enter th[illegible] into what is considered an honourable and lucrative profession, one person having been said to have made £100,000 by farming; whilst with us there have been engaged in the pursuit only ignorant and illiterate people, who often can neither read or write, and who embark in the undertaking without capital, without skill, and without enterprise.

It may appear absurd and ridiculous [illegible]

6 may be paid upon the same
now only pays about one, such
ioned by Mr. Palin in his report;
ore marvellous, that not only may
nt be paid, but that the person
may be living, as they say, in
the while, and making a fortune.
tubborn facts, speak for them-
et any one look over our misera-
es, that, many of them, are a
to the country, and that will
o more than pay taxes, and then
he return from these with what
in the *Gardeners' Chronicle* for
d. In a letter signed Wm. Dick-
ressed to the Duke of Richmond,
thus stated:—"My land, a strong
ood heart (of course thorough
is finely pulverised during the
onths, after tares, or an early
rn; is sown broadcast, with four
seed per acre, of Italian Rye
wn by myself without weeds—
very lightly with bushes—iron
ry the seeds too deeply; if weeds
are pulled, and the grass stands
, which in 1844 was cut for the
the first week in March, with
inches of grass; April 13th, it
he second time; May 4th, the
; May 24th, the fourth time;
the fifth time; July 22nd, the
with ripe seed, and three loads
aw to the acre. Immediately
of these crops the land was wa-
from a London street water-cart,
arts of pure urine from the sta-
ne part of water, the produce of
ncreasing with the temperature
sphere, from three-fourths of a
re, as hay, to three loads per
crop having shed a quantity of
doubtful the urine might injure
, so discontinued to water, but
wed it with iron harrows, and
cting nothing more from it; it
owever, three or four, I believe,
rops afterwards; and has now
standing upon it again, three loads to the acre, the third crop for seed.—*July 12th, 1845, 7, Curzon-street, May Fair, London.*" There seems to be no end to the cuttings here, and to any one, who had not tried it, it certainly appears almost incredible; but when we have it stated by Cobbett, who was one of the most able practical men of his day, that a cow may be kept upon a quarter of an acre of statute measure, we must not disbelieve all that has not been made demonstrable in our philosophy.

To carry on the arable system with any reasonable chance of success, a large and increased quantity of manure is required. Natural grasses will grow of themselves, but artificial grasses and green crops, still more two crops of these in the same year, cannot be raised without the ground being in the highest possible condition, and with much manure properly applied. There are three ways of obtaining manure: making it in the farm yard, bringing it from the next market town, and the purchase of the new manures, the first and foremost of which is guano. If there is one thing in which our farmers are more deficient than another, it is that of raising manure. Many of them throw away the advantages within their reach, in this respect, and rather waste than increase the dung heap, they might with a little care and management have in store. So long as they do this, it is utterly impossible they can carry on the arable system to advantage, as it is much better for them to rely on the resources within themselves for a good supply of this indispensable requisite, and to consider any other rather as an adventitious aid. If a failure arises in their doing this, it is very clear, that, if they take all that is wanted for their ploughed land, the grass land must go without its proper allowance, and here a certain dead loss must inevitably ensue—what cattle are kept, whether as a dairy stock or young ones, should be confined to the farm buildings. Here a question arises as to the advantage of feeding bullocks. It has been considered, particularly by amateurs, that this is a necessary part of good farming; and certainly if one of the first objects to be aimed at, is the making of manure, much may be done in this way by stall-fed or shed-fed animals, and particularly from the latter, as from experiments made, it is believed, that as much manure will be made from one of these, as from two or three of the former. If profit be the aim and end of all farming, it may be much doubted, whether there be as much gained by feeding as is generally imagined. It is certainly one of the most agreeable parts of the whole system to put an additional bulk of fat on a well-formed shorthorn, to watch its increase, to calculate on its weight, and last, not least, to carry away the prize at some great agricultural show, and then obtain a high price from the butcher. An instance of this kind was known lately, where one of these prize animals was raffled for at £150, which was not worth half that sum, when retailed out at the market price, by the pound, nor would it be good for the table.

As to profit, the only way of ascertaining the fact, is to keep a regular debtor and creditor account. I think it is Mr. Mechi who says, that if in feeding you can get back what you have laid out, and have the manure clear gain, you will do well. In the last number of the *Royal Agricultural Society's Journal*, there is an account of an experiment made by Mr Leigh, of Belmont, in which he quotes from Mr. C. Hillyard's work on practical farming—"Beasts should increase in the first month, 64lbs.; second month, 80lbs.; and the last fortnight 48lbs; in the ten weeks 192lbs." Mine did more, I therefore presume they did well; but I confess I was rather disappointed at the effect of the sugar and wheat. Now here is a successful experiment as to the animals doing well. Let us see what is the profit:—

Weight, 192lbs. in 13 weeks, at 6d. per lb.	£4	16	0
Keep, 13 weeks, at 7s. 4d. per week	4	15	3
Profit	0	0	9

Here then is a profit of 9d. without anything being allowed for attendance, risk, and outgoings, which often are not taken into the account, but which are a serious drawback.

The discovery of the great uses of guano is one of the most important in modern days. As a case in point, I would mention a farmer living within about two miles of a large town. He manured two statute acres, which cost him in price £17. 18s. from stable dung purchased at 7s. 6d. per ton, add to this carting, going three times a-day, about £6. making £24. It is said that 3 cwt. of guano will be sufficient for a statute acre of turnips; but I would say 4 cwt. which at £5. 15s., the price given at Liverpool last year for the African, taken direct from the ship would amount to only £1. 4s. the acre. Here then would be a saving in the two acres of—

£24	0	0	
2	8	0	
21	12	0	saving in 2 st. acres.

A capital crop of swedes of my own, grown partly with guano, and partly with guano and dung mixed, show this year very little difference in the appearance of the two, [illegible] any. Some say it is not so lasting, but even if that were so, which has by no means been proved to be the case, you have a capital crop at one-tenth the expense.

But to all the beneficial purposes to which land under tillage can be applied, the [illegible] invaluable is that for allotments.

There has been a great outcry lately against the larger-sized allotment of 4 or [illegible] acres, or even considerably more: some have said that it would be the greatest curse for the country that the poorer classes should be dependent on these. This has arisen from the state of Ireland, but I think erroneously so. The extreme misery there (work only seven months in the year, and that at 6d. per day; no doors, no windows to their cabins; the luxury of a bed or even of a blanket denied them:) all these evils, sad and unparalleled as they are in

y other country in the known world,
e not owing to their large allotments,
cause without these they would be liter-
ly starved; they are owing to the want
employment, and a sufficiently large
eld to work upon. By the report of the
or-law commissioners in 1837 it appears
ere are 5 agricultural labourers through-
t that kingdom on the same area where
ere are only two in this. The price of
ges must depend upon the supply of
our in the market. Remove from a given
a half the number of hands, and you
uble the price of labour, and so *vice versâ*.
til, therefore, a larger field for labour is
ated the same horrid work that has been
ng on there for ages without alleviation
t inevitably continue for ages to come!!!
hat the larger allotment will answer well,
roperly conducted, no one can in the
st doubt, who has read Mr. Blacker's
nirable essay, and who says that by in-
lucing it on Lord Gosford's estate in
land, and by his bringing a superintend-
from Scotland to overlook it, which is
ential, he has placed the poorer tenants
affluence, and has enabled many of them
pay off old arrears as well as their rents.
is then, in agricultural districts, becomes
andlord's question as much as it does a
ant's, and through it the interests of
h may be promoted. Indeed, I have
ays considered that the interests of the
ee, landlord, labourer, and tenant, are
ays so united and mixed up together
t if you assist the one you do the others
o. Look, for instance, where good farm-
is carried on, and you will find the
ee thriving and doing well. Look again
those tenants who are in arrear: they,
haps, live poorly, work hard with the
eat of the brow, and yet are not able to
y their way. If nicely enquired into, it
ll generally be found that it does not
ise so much from high rent as from bad
anagement. On the contrary, those who
osper will be found going on in an im-
oving system.

Nothing can be happier than the picture drawn by Pope of a good landord:

> His father's acres who enjoys in peace,
> Or makes his neighbours glad, if he increase.
> Whose cheerful tenants bless their yearly toil,
> Yet to their Lord owe more than to the soil.
> Whose ample lawns are not ashamed to feed
> The milky heifer and deserving steed.
> Whose rising forests, not for pride or show,
> But future buildings, future navies grow.
> Let his plantations stretch from down to down,
> First shade a country, and then raise a town.

And we have heard a good deal lately of what was said in good truth by one now unhappily no more, "that property has its duties as well as its rights." Yet the landlord to be just as well as beneficent to the three parties named, must insist rigidly and perseveringly on a proper course of proceeding; and in case he finds there are some who will not act in this way, it will then become his duty, painful as it may be, to part with such tenants. A former master of the Cheshire fox-hounds used to say, "if you have a good horse, keep him; if a bad one, sell him; if no one will buy him, give him away; if no one will have him as a gift, shoot him." This rule cannot be applied to a tenant in all its parts; but if you have a well-disposed and enterprising tenant, forward his good intentions and encourage his efforts, and, if possible, never part with him.—*From a Well-wisher to Agricultural Improvement.*

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AGRICULTURAL QUERIES.

If your correspondent "*Simplex*," who in your last number addressed you on the above subject, will refer to the *Farmers' Magazine* for (I think) October last, he will there find a plan of a farm-house and buildings, the property of my friend Mr. Hazledine, of Warburton in the adjoining county, shewing also a liquid manure tank and method of feeding the same from the various places of production, and a communication of mine on the subject of the importance of liquid manures.

Although a manufacturer of an artificial manure, I never lose an opportunity of endeavouring to convince farmers of the immense importance of paying better attention to the economy of their manures, more especially the liquid portion thereof; and I sincerely hope that before long every farm-yard will be furnished with a well-constructed liquid manure tank, and that the most perfect means of fixing the organic matters contained in the same will be in general use. It is impossible to over-rate the importance of this subject; and those are really and truly *farmers' friends* who use the opportunities they possess to impress upon their minds the fact that the prosperity of the agriculturist mainly depends upon the management of the manures produced on his farm.

In answer to your correspondent's queries:—

1. The form I prefer for a liquid manure tank is either circular or this ⬭, because a nine-inch wall will be sufficiently strong, (especially if circular) to resist the outward pressure, and a good "puddle" of clay will be more durable and economical than cement of any kind.

2. It is *not* essential that the tank should be air-tight, but it *should* be covered over.

3. If the object be to render the liquid manure of but little value, *and to drive off the ammonia*, then indeed you may add lime; but as that is *not* the object, you should fix the ammonia by the addition of sulphuric acid or gypsum (sulphate of lime,) agitating the mixture *well*.

4. Your liquid manure should be fixed by the addition of either of the above articles as early after it is collected as possible, after which it will undergo no change, and may be applied at convenience.

5. It is *not* advisable to allow the water from your spouts to run into your tank, as by so doing you increase your labour in pumping and cartage, and occupy your tank without advantage; but as the saturated liquid will probably be too strong to be applied beneficially unmixed with water, showery weather should be taken advantage of as the best period of application.

6. The liquid manures, after being fixed or saturated, will be found exceedingly beneficial for *crops of every description;* nor should the gypsum, (if it is used,) with which the ammonia has been fixed, be thrown away—it will be found a valuable top-dressing for grasses of every description.—*W. Maddick, jun., Manufacturing and Agricultural Chemist, Manchester.*

TANKS.

Having had some practice in preserving and applying liquid manure, consisting of drainage from the yards and sheds, I can safely reply to the queries of *Simplex.*

1. A nine-inch brick work covered with Roman cement will be found ample for any moderately sized tank. There must be a complete bottom of bricks, also cemented over.

2. It is not *essential* that the tank should be air-tight during the fermentation of its contents; but it is desirable that it should be as close as convenient.

3. Lime would *liberate* not *fix* the ammonia. Gypsum is the best fixative of ammonia, but I never fix it in my tank, and think it is desirable to fix it in a way which I shall refer to in the answer to the last query. Lime would, if applied, give off carbonic acid gas, which would unite with the ammonia and form carbonate of ammonia (smelling salts,) the most volatile substance in nature, as an open smelling bottle at once indicates.

4. From one month to two is the best time to allow the tank to ferment: the former period in summer is quite sufficient. Fermentation is also promoted by never quite clearing out the tank, but leaving the old liquor at the bottom to act as a ferment to the new.

5. Rain water will weaken the tank liquor, and therefore it is best excluded: if not, a larger tank will be requisite, and more labour in conveying it away.

6. I have applied tank liquor to grass land, but it appears to be useful only in

eat quantities and at particular seasons. far the best mode of applying it is to *npost.* Road scrapings, quitch, (couch,) nks—earth of any kind, absorbs the li- or, and the various salts they contain the ammonia in precisely the way the nts require, and in the manner the earth s for them in the state of nature.-*M.M.M.*

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RICULTURAL IMPROVEMENTS.

your last paper, you had an article, ad- ssed to landowners and capitalists, on drainage, inclosure, and improvement ands, by means of joint stock compa- , which I perceive has been copied into ral Scotch papers: will you do me the ur to procure for me an answer to the wing query:—"What is included by writer under the term *improvement?*" inage and inclosure I can well under- d, and I follow the writer of the paper ded to through his whole argument, but m totally at a loss to know what he ns by the term "Improvement." Does word apply to the erection of farm dings? Does it apply to subsoiling land r drainage? A reply on this head will ge.—*O.*

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e have refered our correspondent's r to the writer of the article above men- ed. The following is his reply:—

y the term *Improvement* I mean any ay for the erection of new farm build- , or the erection of *new* fences, or for cting indeed any other object which ld come under the term "*permanent rovements,*" such as making new roads, ges, &c. The Earl Ducie gave the wing evidence on this subject before mmittee of the House of Lords. Speak- of poor grass lands, which would be far e profitable if broken up, his Lordship's mination proceeded:—

hat is the reason it is not broken up?—The n, as far as is connected with the entailed es, is, because the process of draining ls also another expense, namely, building, not the farmhouse, but increased farm buildings, to enable the farmer, upon breaking up the land, to make the most of his roots, his straw, and his hay.

Is that too heavy an expense for a man who is the possessor of an entailed estate?—I would take my own instance, as the possessor of an entailed estate; a man with a large family and not a very large income. It is impossible for me to take the whole estate on my hands, and immediately put it in the best possible condition, on the cheapest terms. I may be able by degrees to continue the draining; but to put the land in the best possible state, so that the greatest benefit from the improvement may be obtained by the tenants and landlord, it is necessary to erect sufficient buildings and sheds for them to make the most of their roots and straw; that is a sum that must be taken in the gross; it cannot be done in detail, and that prevents me from doing it. I can go on annually draining, but I cannot face so large an expense as the buildings.

Would not this land yield an adequate return if it were to remain in pasture?—No doubt; but the district being a cheese district, it is found that by drainage a great many of the cheese-making grasses fail, and the land produces a more feeding quality of grass. I have no hesitation in saying that a better profit is to be made off this land under the plough than under grass.

How much do you think per acre some of the lands you have alluded to would be improved by being drained and broken up?—I did not drain last year, because I expected improvements in tile-making machines, and I was in hopes that some legislative measure might pass which would enable a man to grasp an estate and drain it on the lowest possible terms. The last land I drained I took from the tenant, and he was glad to part with it at £1 per acre, and that land is now worth fully £2 per acre. Last year, a bad year for roots, I had from 16 to 20 tons of Swedes upon it, and I have now a crop of wheat growing upon it, which will be, I have no doubt, from 4 to 5 quarters. I have hitherto found it average 5 quarters.

Does not the fact of the possessor not being enabled to charge the expenses necessary for erecting buildings prevent its being broken up?—It has prevented its being broken up.

If, instead of laying out an immense sum, he could charge it over a number of years on the estate, would you think he would then avail himself of that power to raise buildings, and by that means the land would be broken up and much improved, and the produce greatly increased?—I have no doubt, under those circumstances, that the buildings would be put up. What I call inferior grass land is land worth less than £2 per acre. I think such land would be broken up for the benefit of the landlord, the benefit of the tenant, and the great and incalculable benefit of the agricultural labourer.

Being the owner of an entailed estate, if an Act of Parliament passed to enable you to borrow money for the purpose of draining your estate, should you do so?—Most decidedly; but it would have a very great influence on me whether or not I was enabled by the same Act to put up buildings, because I feel I should not get that increased value for my property in consequence of the drainage unless I could at the same time afford my tenants the means of using to the greatest advantage the increased produce of the land.

He is corroborated by Mr. Pusey as follows:—

Do you think that in the state of advancement which agricultural knowledge has come to it is a permanent improvement to have good buildings erected upon farms?—I think it is extremely essential to have good buildings erected upon farms. But a great many cases would arise, where, if power were given to the owners of settled estates to charge their lands for that purpose, I think there would be danger that persons might be disposed to charge their lands improperly with the expense of the repair of buildings which ought to fall upon themselves. But, on the other hand, if that danger were guarded against, as I have not the least doubt it could be, and if care were taken that the *farm* buildings to be erected should be *bonâ fide* new works, I have no doubt that it would tend extremely to promote the improved cultivation of the country. With the permission of the committee, I can state one or two different classes of cases in which it would arise. The first case would be with land which is now waste. We have a very large extent of waste land in this country, which it is proposed by a Bill introduced this year to inclose. When you consider the expenses of bringing the land into cultivation, and of erecting farm buildings, and when you consider that a great part of those commons are in the hands of large proprietors whose estates are strictly settled, I do not see any means by which the intentions of the Government can be carried into effect, unless the owners are allowed to charge their property for the purposes of building.

Do you consider that there is a great deal of poor grass-land in this country which it would be a benefit to plough up?—Decidedly.

In case it was so ploughed up, would not that land require to have farm buildings upon it?—Clearly.

Taking the two things together, would that be a permanent improvement upon the land?—That would just be upon the verge between a new work and the repair of old property. Considering the great benefit arising from the breaking up of grass-land, in the employment of labourers, I should be inclined to look favourably upon such an improvement, and with great caution against fraud on the part of the tenant for life, to enable him in such a case to make the buildings necessarily arising out of the conversion of the land from pastoral to arable purposes.

Do you think that a great quantity of land now in pasture is not broken up, in consequence of the necessary expense incurred in erecting buildings?—I have no doubt of it; and it is a great check to the employment of agricultural labourers.

Sir C. M. Burrell, Bart, also corroborates this, and speaks to an absurdity which ought no longer to continue:—

Do you think it is a permanent improvement to have good buildings upon farms?—No doubt;

proof of that I have laid out a very large m of money upon my estate, and I believe I ay venture to say, without presumption, that estate in the county of Sussex is in better der than mine with regard to buildings of all scriptions; it has been my pride as well as y satisfaction to do it. I wish to make the ttages and farmhouses as convenient and as mfortable as they ought to be, in a reasonable ay. I have adopted a plan with regard to the ainage of cottages, which I find very beneficial deed. Whenever I have to build a new cotge, or to take up the floor of an old cottage, I e broken stone and broken bricks, and make rain from the fireplace directly through the m, and also across any room adjoining, to an fall where the drain runs into it, and we find cottages are made very dry by it, and very ch more healthy. It is a thing of very trig expense. I have mentioned it to architects or three times, who have all thought it a y good thing, observing that they had never rd of it before, but should recommend it in re. Alluding to the question of the comtee relative to good farm buildings and 'other manent improvements,' I beg leave to offer he consideration of the committee, that no ater improvement of entailed property would attained than by the passing of an Act of liament for the purpose of enabling persons ing life interests in entailed estates (with consent in writing of the trustees or the ority of them) to convert timber (allowed by testator to be cut for the purposes of the airs of such estates) by sale into more subtial materials, as stone, brick, slates, tiles, a, lead, cement, &c., instead of their being the stringency of legal and literal construcn forced to apply the timber itself in necesy repairs, an absurdity self-evident, when, as most estates prevailing, houses and cottages, ns, cart-stables, and other farm buildings, ginally built of stone or brick, require solid airs by appropriate materials. Contrary, wever, to common sense, and contrary to the nefit of entailed estates, and the essential inrests of the heir, more especially than the ner for life, such are the prejudicial opinions of persons learned in the law. So that without some Act of Parliament giving a wider latitude, and at the same time a latitude of construction favourable to all parties interested in such entailed estates, no trustees will run the risk of sanctioning such conversion of timber, even with the consent of the next heir, for were he to die the future heir might call their decision in question. In stating this I disclaim any interest for myself, while I add that I have been subject to the hardship of this legal construction (though my son was consenting to the proposed conversion of timber;) but having lived to put my wishes of permanent repairs, even to rebuilding or adding to farm-houses, into general execution, what I now say is for the benefit of other estate holders similarly situated; and I earnestly hope it will be deemed worthy of the consideration of the noble lords now sitting in committee, and may by their means lead to some beneficial enactment.

Whilst buildings were erected of wood and straw, the provision of timber from the estate for the purposes of repairs, were sufficient; now, however, that more permanent materials are found more economical and better in every respect, the mode of meeting the change proposed by Sir Charles appears most just and reasonable.

I trust this answer, and these opinions of leading agriculturists, will be deemed by your correspondent a sufficient reply to his query.—*B.*

We hope so too. We always considered that by "Improvements" were meant those permanent advantages to an estate which which belong exclusively to the landlord to provide. And to the landlord too in his character of owner of the fee-simple of his estate, and not as mere tenant for life under an entail. The law as it stands at present provides for the *maintenance* of farm buildings by a tenant for life—that is, for the upholding of such as are at present upon the estate. What is required now is such an alteration in the law as shall compel *the estate* to provide sufficient new buildings which, in consequence of the augmented produce from it, shall become necessary. —Ed. B. C.

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THE IMPORTANCE OF CATTLE INSURANCE.

The observations made in your leading article of the last number of the *British Cultivator*, on the fatality caused by the prevailing epizootic amongst cattle, and the indemnity against serious losses prevented through the medium of insurance, assumes a character of peculiar importance at the present time. No feature in our economy stands out in bolder relief than that of insurance as applied to the contingent reverses and instability of human life, to the protection of property against fire, and to the security of merchandize by sea. Though yet comparatively in its infancy, and only partially developed in its protecting powers, the science has become so combined with almost every relation of life, and its ramifications are so widely spread, that it may now be considered part and parcel of our commercial system. But while protection has been offered thereby against the reverses of human life, the destructive ravages of fire, the casualties of the sea, and even against the blighting effects of hail-storms, property to to the amount of nearly £350,000,000 sterling in this country, has, till lately, been left entirely unprotected and unprovided for by the economical and sure operations of Insurance. The live stock of the farmer in this country has been exposed to accident, disease, and death, without any hope of equivalent by the owner, or the most distant idea entering his mind of the probability of protection; while on the continent, societies for this laudable object have been in existence for many years, and have been abundantly successful.

The principle, however, has now been introduced into England, and being one of the parties who visited the foreign societies for the purpose of ascertaining the results of their experience, and having devoted much time and labour to the collection of general statistical information in our own country, with the view of establishing *something* like correct data for cattle insurance, I may be presumed competent to offer an opinion on the subject.

My object being to make some remarks on your article in last month's number I have considered this introduction necessary in order to give that weight which is requisite in all questions of this important nature to the opinions which I may advance.

"Cattle insurance," you say, "is a new thing not only to farmers, who have a proverbial dislike to novelty, but also to capitalists: the latter can hardly pronounce with certainty upon the accuracy of their tables, nor are the former prepared to place implicit confidence in them."

With regard to the farmers of this country there is no doubt that they move slow, as "great bodies" always do; but that, within the last few years, there has been such a "shaking among the dry bones" as has materially disturbed the dormancy of their reflective powers, we have abundant evidence in the establishment of agricultural societies, farmers' clubs, local cow clubs, &c., &c.; and whatever novelty can be introduced to their notice, if proved by positive and visible facts to be personally advantageous to them, will meet with attention. That the benefit of insurance, as applied to their live farming stock, is an advantage to them, admits not of a question; and when they are satisfied of the *responsibility* of the company which offers them immunity from loss, and of the *personal respectability* of the parties directing the operations of that company, they will consider it quite as important a duty to protect themselves against loss among their live stock, as against the casualties occasioned by fire. To establish confidence with the farmer, however, there must be a firm conviction in his mind of the stability of the company in which he insures, and this leads me to discuss the rival claims of the *mutual* and *proprietary* systems, as applied to this peculiar species of insurance.

The *mutual* system in its application to human life may be the more *economical* of the two, and its premiums I am aware might be considerably reduced; but no mutual life insurance society was ever yet started without either a *guarantee* fund, or such a number of members to begin ith, as would, from their premiums, raise an nmediate available fund, as, by the law of ortality, would place them beyond the reach f present danger, and according to the common ourse of events, a society of this description, ith ordinary caution in the selection of their embers, would not probably have a death uring the first five or six years. The accu- ulations, during this extent of time would rm a guarantee of themselves, and the society uld go on and prosper.

But how does the system operate when ap- lied to the insurance of cattle? Here is an tirely new field—the two cases are not at all alogous. Instead of effecting insurances on ect portions of the human race, whose expec- ion of life is established almost by rule— ere deaths, according to ordinary calculation, not occur for a certain number of years— where fatal epidemics and plagues are now ost unknown, this insurance is to be effected thousands and thousands of the brute creation osed to accidents of every kind—dependent the treatment of their owners—subject to ious diseases—carried off in hundreds by l epizootics, whose erratic track is utterly mprehensible. There is no selection of best lives out of a stock—there is no legiti- ely established inference that no deaths will ur for a given number of years; whole stocks taken in the aggregate, provided certain liminary rules are complied with, and deaths st naturally take place nearly from the first. s being the case, a draw upon the funds must ur during the first year, and if any extraor- ary season of mortality supervenes, there st be a further call upon the members, and guarantee fund can possibly be accumulated future contingencies. Thus there is an end he analogy between the insurance of cattle that of human life.

But you say, "of the mutual system there be but one opinion, and honestly carried out s the most economical that can be devised, l offers advantages to the parties interested ich no other can give. All that good and eful management can save is gain to the mer who insures—no profit is made by any other than himself." Now, as applied to the insurance of cattle, so far as we have yet had experience in this country, there is no gain to the farmer from mutual insurance which a proprietary company cannot give. If one single case can be pointed out in which any single member of a mutual society of any extent, for the insurance against loss among cattle, ever received any return by way of *bonus*, or otherwise, from the payments which he had made, or if it can be shown that any *profit* ever accrued to an insurer in a Mutual Cattle Insurance Society either *by way of reduced premiums or bonus* which he would not obtain from a Proprietary Company, there are some grounds for a preference. But if insurers are to have no return of premiums from a mutual society, nor can be insured at any less rate, I argue that a proprietary company has the advantage, because its capital guarantees a perfect security to the assured against all contingencies of extraordinary mortality, and exonerates him from all the dangers of partnership—advantages in these days of speculative enterprise, far more than equivalent to any paltry saving which might be effected in the amount of a premium, even if that could be made. But when a proprietary company, consisting of a wealthy and influential body of individuals, independent of the security which its capital affords against risks of a most important nature, can offer to insure stock on equal terms with, or even less than, those of a mutual society, the advantage is evidently on the side of the proprietary principle.

What does it matter if shareholders are making a "profit" out of their investment, provided the insurer is not made to suffer for it? What cares he who gains, provided his own pocket is not affected while at the same time his security is increased, and he can go to rest undisturbed by the fears of partnership or the terrors of the epidemic among his stock? for whatever happens, even if the whole number insured by the company were swept entirely from the earth by some dire murrain, he would not be called upon to contribute a farthing towards the loss; he would be indemnified for his own individual damage, and the shareholders who are receiving "*a profit*" out of the company must alone meet the demand. *They* are liable for the whole, but the *insurer* is protected and free.

A writer on this subject in the *Agricultural Magazine* for July last says, "I am satisfied there is no Mutual Cattle Insurance Club in the country but would be broken up by a murrain or any other extensive disease. In this case the members of such a club would have to indemnify each other out of their own pockets. A company with a wealthy proprietary is the only safe association in which owners of live stock can insure their property. It is the only kind of cattle insurance company which has within itself the elements of stability and permanence." But the most striking illustration of the instability and insufficiency of the mutual system, for certain kinds of insurance, is given in the *Irish Farmers' Journal* of July last. The remarks certainly have reference to fire, but they apply with tenfold force to cattle insurance. "We have taken some pains," the editor remarks, "to show the unsuitableness of mutual assurance for the as yet novel purpose of protecting the farmers from loss against mortality amongst his live stock. The advantages of this principle of assurance have been already admitted in certain cases, but to these cases it should be confined. In the late calamitous fire in Canada most of the property destroyed was, it appears, insured on this plan; but as the operations of the company were confined chiefly to the locality destroyed, the insurance afforded no protection against loss. The assurers themselves were the persons to make good all losses, but having been all sufferers the claims became of no value."

Thus it would be with a mutual society for the insurance of cattle. If one half the cattle insured were to be carried off by some raging disease, every member would have to contribute his quota towards the reparation of the loss. If all were taken off no one would receive more than the amount of his bare premium, and most probably not even that; whereas in a proprietary company, in all these contingencies, every man would be paid the full amount of his claim. In short, the comparative advantages of the two plans, as applied to this species of insurance, may be exhibited as follows:—

MUTUALS.

1. Premiums higher than in proprietary companies.
2. Partnership with persons of all classes.
3. Liability to further contributions in case of extensive loss.
4. No profits returned.
5. No security against loss in case of mortality beyond the calculated average.
6. Loss of every thing in case of general epizootic or other fatal disease.

PROPRIETARY.

1. Premiums lower than in the mutuals.
2. No risk of partnership or of its serious results.
3. No liability to be called upon, under any circumstances, for any contribution beyond the bare premiums.
4. Returns of profits in the shape of increased payment in case of loss.
5. Perfect security against the contingencies of extraordinary mortality.
6. The certainty of having every claim paid in case of general epizootic or other fatal disease.

Again, in reference to the accuracy of the tables formed for this species of insurance being doubtful, I think you are in error. Taking into consideration the experience of foreign societies, and the great mass of statistical information on this subject which I have collected in our own country, I am of opinion that we have data quite as ample to guide us for this species of insurance, as we have had till lately for insurance on human life; and as insurances are taken only for one year, our risks are decidedly much less.

When a company for life insurance was first brought out, a charter was refused by the government on the grounds that the rates were not sufficiently high to meet the risks; whereas they were then more than double of what the rates of the same company are now. This was owing to the general ignorance which then prevailed as to the law of mortality, a study which was confined entirely to a few individuals. With regard to cattle insurance there is yet the same general want of statistical knowledge, but that is no reason why individuals may not have adopted the same means for the acquirement of data, on which to form correct tables, as were sorted to for the establishment of lives; and this has been done to derable extent; at all events, the l are much higher than those of the French societies which have done erefore, even if the tables are not a mathematical nicety, they may considered safe and remunerative, object of no mean consideration.

ne to the last point of your article rtant subject, and here I am glad with you: I allude to the *average* advocated and illustrated by Mr. ound are his views on this subject, his arguments, that the Agricultu- Insurance Company have adopted , and the satisfaction is general. I bt but that it will add greatly to of the company, while at the same lifies the machinery, and secures ainty of justice between the com- e insured.

'alin, yourself, and others, who have hemselves in the welfare of this and to whose practical suggestions ted for many valuable improvements lations, I beg to return you my nks, and having already reached the amount of £12,000 per week of I trust that all friends to the cause e so to unite their energies with ours, me in my next communication, to gratifying announcement that the loubled.—*W. Fenton.*

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OUSING GREAT CATTLE."

(Continued from page 224.)

re certainly comprehends more parts of han any other profession, art, or science, in It was Virgil's first wish to be a good philo- econd to be a good husbandman, for unless a plilosopher he could not have been a good ."—*Robert Maxwell, of Arkland. Select s of the Scottish Improvers.*

slow progress which agricultural know- retofore made under the patronage of the seems but reasonable to infer that *letters* e usefully subservient to its advancement. ome is treacherous; it is fallible in all; and not in any man equal to the retainment of ge requisite to a perfect practice of agricul- e pen seems not less necessary to farming ic, philosophy, or any abstruse art or sci- *shall's "Minutes of Agriculture" upon his*

Without any other introduction than our mottoes from a pair of the most practical ruralists that ever devoted their time and talents to the promotion of the science, the improvement of the practice, and the extension of the general interests of agriculture, we proceed with Dr. Comber's remarks upon cattle, to the following effect:—

"The third objection against housing cattle in winter (that it requires much more attendance) seems more specious, but will be found equally inconclusive. The taking away of the dung from the cattle, the driving of them to water and back again, are circumstances of attendance avoided, to be sure, by letting cattle lie out, but they are not really very considerable, and are abundantly recompensed by other circumstances of attendance which are saved. The man who houses his cattle properly will contrive to have a pond near his cow-house; to this the cattle soon go of themselves, and as regularly return. In the mean time the dung is moved away, and the stalls are supplied with hay from the neighbouring stack, by almost any boy, or woman on occasion. And so much attendance is saved by this practice of housing, both to the milk maid, who has only to go into an adjoining dry house instead of a wet and distant close, and to the man servant, who has not his fodder to carry to distant and wet grounds, and to disperse over these grounds, that it is well known to be one of the first enquiries which both men and women servants make at the time of hiring, "*Whether the master who treats with them houses his cattle?*" And he who does house them may always hire servants considerably cheaper than others who do not can; as servants who know the slavery of attendance on cattle lying out will hardly hire at any rate to such as do not house their cattle, if they can hire to such as do. The masters also find so much time saved by the less attendance on cattle housed than those which lie out, that they can even dispense with fewer servants, both men and women, in winter, than they could otherwise; so that the saving of attendance by housing of cattle may justly be considered as a balance to the leading home of hay, and leading out of manure.

The fourth objection, as to the expense of houses, &c., is in a manner already anticipated and answered. Few farmers want a south wall of some kind; against this let them erect a kind of helm of any coarse wood, and wind the eastern and western ends with thorns or furze if stones be scarce.

Let them cover it with a few waggon loads of furze, broom, or heath; and if they thatch it slightly it will last many years. The stalls, as they are kept dry, may be made of any offal wood, and the channel for a conveyance of the urine is soon laid with coarse stones.

As vacant seasons for leading out the manure may be taken, this, though the chief, will be no *great* expense; and probably the attendance saved in winter and spring will be a balance, both to the expense of leading home hay in season, and leading out manure at a proper time, especially if the farmer judiciously contrives to have his meadow ground as near home as possible; and if he cannot have this, his *winter attendance on lying out cattle will be proportionably greater.*

But if it should be thought that the saving of attendance in winter and spring is not an equivalent to the expenses incurred by housing of cattle, and enumerated in this objection, yet this saving is *considerable*, and the advantages about to be mentioned must be thought to overbalance any expense incurred by it, in the opinion of judicious men; especially as a cowhouse once built stands many years, and a team has little other work, betwixt the autumnal season and depth of winter, than to lead out manure, or in the hay harvest than to lead the hay home. I would have manure led out as soon as the aftermath is eaten.

The fifth objection is grounded on a supposition that the manure which is made by housed cattle, when they are turned out in the day time is lost. But to this I answer, that the cattle are generally turned into a yard or field in the day time; in the former case, the manure is easily shovelled up at a proper time, and carried out in the same way as the rest; or in the latter case, it is spread on the ground where it is made, so that there is little or no loss of it. Indeed, people who *agree* in the point of housing of cattle, differ in their sentiments about managing of them in the day time; some keeping them continually in the *house*, or at least *yard*, except the time of watering; others turning them out by day, and the different circumstances of people will make these opposite methods of management equally prudent; for instance, where manure cannot easily be gotten, it will be advisable to take particular care of all that is made by the cattle, as they have nothing else for the tillage. On the contrary, where people have plenty of other manures, and are at a distance from water, it may be advisable to let their cattle out to browse.

As to the last objection, lying out exposes cattle to colds which produce many distempers, and is utterly inconsistent with their health, except in very favourable winters. But if the farmer really thinks that his cattle want exercise, he may turn them out in the best part of the day into his driest ground; yet I am myself convinced that till spring approaches, cattle get much more harm than good by *staying* out. *Standing* out is *not exercise*, and cattle turned out in unfavourable weather *stand* rather than *walk;* and cows which lie out, stand too much, unless hunger oblige them to walk in search of food.

I will now very briefly exhibit the advantages which result from the housing of great cattle.

In the first place, by this means the meadows are winter feed, and the best assurance of a good crop of hay is laid.

In the next place, the injury done to the soil by the treading of great cattle is avoided. I once saw a small close of very rich soil in this neighbourhood so trodden by very large fat oxen in a wet winter, that though half their hay was trodden under their feet, and the next summer a moderate one, there was absolutely no crop. The oxen weighed about a hundred stones each.

In the third place, the carcases of the cattle are kept in much better plight.

In the fourth place, the cows give much more and *better* milk, and *longer*.

In the fifth place, the cows avoid many disasters in calving, and are then attended with great ease.

In the sixth place, the calves are found to be *stronger* and *livelier*.

In the last place, the manure is laid on such grounds and parts of grounds, as most *want it*, and in any proportion, and with any mixture the farmer pleases; whereas it is notorious, to the sorrow of many a farmer, that cattle lying out, manure chiefly the ground which is under hedges, and wants it not, and by its irremediable evarseness never pays for that manure.

I must add in conclusion, that there is no comparison betwixt keeping oxen in a fold garth, and keeping them tied up like milch cows.

For, in the first place, much mischief is often done by the oxen to each other, when promiscuously turned out into a fold-yard, and especially to the younger and weaker.

Secondly, they all lie exposed to the wet from heaven, and consequently to the same evils, in some degree, as when they lie out.

irdly, as the fold-yard is the sink of
eir urine, they often *lie wet*.

stly, the waste of straw which is made
old-yard is incredible. Were straw
other value than to make manure of,
teeping of it thus in the urine of the
would be a judicious method, but, it
always be made of much more value.
n kept clean, the straw will maintain
ch greater quantity of cattle; and if
be *less* manure it will be *better*, and
will be much more profit from the
ses of the cattle.

now a farmer who last winter took in
oxen for twenty weeks, at two shillings
ead each, that is eight pounds. These
fed in a fold garth. I think it is no
sonable supposition, that the straw
under foot by these oxen, would
kept two more oxen, if fed in the stall,
is, would have given the farmer four
ds more.—*Thos. Comber, East Newton,*
h 17, 1764.

S.—The inconveniences which attend
garths begin to be so well known, that
ant in this estate, of a farm of £200 per
m, who milks above twenty cows, and
ls in proportion, has no fold garth. If
are anywhere advisable, it is where a
quantity of beans are grown, the straw
ich being scarcely fodder for any cattle,
st wrought into manure in a fold-yard.
even in this case, the straw may serve
nder bedding in stalls, and the incon-
ncies attending all fold-yards seem
ly to preponderate.—*T. C.*"—*Hark!*
ard!

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WHEAT AND BREAD.

noticed, at the time it appeared, vol. ii.
, Sir G. S. Mackenzie's pamphlet on
its most useful for bread-corn, and we
pleasure in making our readers ac-
ited with the following:—

marks on the qualities of wheat necessary
e manufacture of bread, by the ordinary
atent processes. By Sir G. S. Mackenzie,
, F.R.S., V.P.R.S.E., &c.

st year I published a pamphlet on the
e of wheat for seed, in which an at-
was made to set forth the importance
mining the chemical constituents of
t, in reference to the manufacture of
. I failed to impress this on the
and and Agricultural Society of Scot-
and, though the subject has not been
up by the Agricultural Chemistry
iation, nor by farmers themselves, I
ly regret these facts. They have not
ed me, however, from following up a pursuit manifestly fraught with importance, and the results of my inquiries have fully justified my perseverance. Such inquiries are unquestionably too expensive to be made by individuals, and ought to be taken up by public bodies. But, unfortunately, the latter have their attention too much attracted by useless cattle shows, the effects of which seem to be not to benefit the public by furnishing wholesome, cheap, and abundant food, but to put money into the pockets of butchers, the providers of dinners, the builders of pavilions, and newspaper printers, besides gratifying self-love in after-dinner speeches, meaning little, and effecting nothing.

Circumstances, as I will presently show, have occurred to render the inquiries referred to greatly more interesting and valuable than they were when they were commenced; and I doubt not they will attract the attention of the numerous readers of your excellent publication, and by its means the notice of the public in general.

At the time when I offered my pamphlet to public consideration, I was impressed by the belief that the nitrogenous ingredients of wheat were those which were chiefly nutritive; and that the varieties which contained the largest proportion of these, were the most valuable. This is unquestionably true; but the result of chemical investigation has proved that the wheats in greatest estimation for making bread contained a much smaller proportion of these matters than others which bakers rejected as unfit for their process. This fact is important in itself: and another has been elicited, also of importance, that the success of the manufacture of bread by the ordinary process, in other words, the baking quality of wheat depends on the proportion of sugar.

Now every one knows that sugar, gluten, and albumen, constitute the chief nutritive ingredients of wheat. But every one may not be aware of what chemistry further tells us, that, in the ordinary process of baking, the sugar is totally destroyed, and part of the gluten. Let us see, then, how matters at present stand in reference to market prices, and the real value of particular varieties of wheat as an article of food. At the time I published my pamphlet, a Baltic wheat, known by the name Wolgast, was rated at 58s. per qr.; another wheat, a new variety sent to me by Col. Le Couteur, and called by him Trémois (which was erroneously written by me Tremaine,) was examined by six different persons, three corn-dealers and three bakers, and the average of the values stated by them was 47s., 11s. under the value of the Wolgast. Having obtained more minute analyses of these wheats, I find that the amount of the nutritive ingredients in Wolgast wheat is 14.6 per cent., and that in the Trémois 17.8 per cent., showing a difference in favour of the latter (which grew in Ross-shire) of 3.2. Compared with a Ross-shire wheat, the difference against the Wolgast is 4.7. As the sugar is lost in baking we may leave that out, when in comparison with Trémois wheat, the Wolgast loses 4.1. Thus, then, it appears that the rejected wheat had the greatest proportion of nutritive matter, and was, in fact, the most valuable. This is a fact of too great consequence to be overlooked. Of course it is most important to prevent, if possible, the loss of the sugar and any portion of the gluten in the process of baking.

This leads me to notice some matters, well worthy of attention, connected with the patent recently obtained for raising bread by the process of uniting hydrochloric acid with carbonate of soda, and thus, at the same time, introducing salt, which is necessary to render the bread palatable. This process leaves the nutritious ingredients of wheat untouched; and hence the patent bread ought to be, and, if made of nutritious wheat, unquestionably is, the most nourishing. It is obvious, however, that this patent process does not, like the old one, require wheat of a particular quality. Flour containing scarcely any nitrogenous ingredients, may be made by it to rise into light bread. The raising is a mechanical operation effected in the one case by chemical action producing vinous fermentation, and the decomposition of the sugar, which causes carbonic acid gas and alcohol to escape; and in the other case, the addition of hydrochloric acid to the carbonate of soda, sets the carbonic acid free, while common salt is formed.—By this latter process bread, to all appearance good, and at the same time palatable, but very little nutritious, may be imposed on the public by dishonest persons, or even in ignorance. It has become a matter of indifference to the baker what flour he uses. In the old process of baking the use of alum, for whitening the bread, was limited, because its use beyond a certain amount stopped the fermentation. In the new process adulteration is facilitated. The public, therefore, is very deeply interested in the matter. We now see that the ordinary process of baking actually destroys, to a considerable extent, the nutritive portions of wheat, and therefore the patent process should be encouraged. But, at the same time, it will be necessary that, to secure its advantages, no other than wheat of the most nutritive quality be used. The chemist, therefore, must be applied to in order to check any tendency to fraud. As farmers and their families eat bread it becomes their interest to look for and cultivate wheats that yield the largest proportions of nutritive matter.

It is the interest also of the patentee of the new process to promote the search for wheats that, while suitable to the climate of Britain, shall be productive, and contain what is required in large proportion. Thus a complete revolution is likely to take place in the kinds of wheat cultivated at home, and the choice of wheats for importation; and I hope I may not only have laid the foundation for it, but that I may live to see its accomplishment. I am already in possession of minute analyses of a considerable number of wheats, but until I obtain some more analyses of wheats I have now growing, I will defer submitting any till all are made.

Should this meet the eyes of the leaders of the great Agricultural Association of England, I shall be happy to correspond with them on the means which they may adopt for extending our knowledge of this interesting and most important subject. Should the patentee of the new baking process see these remarks, I shall be ready to communicate with him in regard to the deep interest he may feel in reference to what those bakers to whom he has sold licences may do.—*G. S. Mackenzie, Rosebank, Roslin, N.B., August* 2, 1845.

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CATTLE MEDICINE.

We copy the following article from the *Ulster Gazette*. The practice which it exposes cannot be too widely condemned. We trust all our brother Journalists who watch over the agricultural interest will join us in condemning what may in strictness be called—

Cruelty to Animals.—There can be no greater cruelty practised towards man or beast than to 'physic them to death' unskilfully. I should be amongst the last to complain of quackery, and the unskilful treatment of cattle by unqualified persons, as it sometimes affords us a profitable accumulation of business, in being called on

ssionally to remedy the evils, if possi-
inflicted. But I neither court nor
re this branch of professional practice,
natter how profitable, could it be
led, but which must continue so long
e owners of valuable stock suffer them-
s to be stultified by adopting the nos-
s, and administering the medicines
ribed and compounded by unskilful
nqualified persons, not by any means
ssionally acquainted with the diseases
ttle, no matter how well qualified to
arge the duties of the branches of
cal science they profess, and in which
have been brought up. It has been
ot to attend three cases of superpurga-
in the horse within the last ten days,
ed by the administration of purgative
, compounded by druggists, two of
h cases terminated fatally within
ty-four hours. It is a crying and ex-
ve evil that country druggists and
hecaries should continue in the practice
mpounding the prescriptions of quacks
orses, &c.; and it is penny wise and
d foolish for owners of horses to resort
em, instead of legitimate veterinary
titioners. The danger of giving badly
pounded medicine to horses is very
t, and the consequent evils and loss are
ledly more than can be calculated on
ny but veterinary surgeons. I must
ss, were I to place before the public in
d numbers, the loss sustained by
rs within the circle of my own obser-
n and practice, during the last three
ur years—not to speak of prior periods
amount would be startling, and would
serious and appalling lesson to holders
ery description of live stock. Profes-
l veterinary practitioners never pre-
e for, compound, or administer medi-
o human patients; they conceive it out
eir line, although, in many instances,
qualified to do so. Therefore it is the
inconsistent for persons, confined to
erent sphere and line of practice, to in-
e with the veterinary profession. In
s name, let apothecaries and druggists
ound the prescriptions of qualified
inary surgeons *ad libitum;* but let them
eal in quackery, and do extensive evil.

s, the pricipal compound of horse phy-
a gum-resinous substance, and cannot
mpounded sufficiently well in summer
m balls. This should be done in win-
hen every respectable veterinary prac-
er prepares what he is likely to require
g the summer. Now it is not unfre-
tly the case, that apothecaries will not take the pains, or go to the trouble, of taking proper material for horse medicine, and in almost all instances they leave the compounding to their shop-boys and inexperienced assistants, who—fancying that anything is good enough for a horse, and that quantity, not quality, is sufficient—in making balls and boluses, &c., sweep into the mortar the dust of drawers and sweepings of counters, not aware that the constitution of the horse, and the diseases to which he is subject, should be treated as delicately, if not more so, as those of a human patient. I write thus, I may repeat, from the daily experience I have of the extensive evils consequent on quackery, and the compounding and administering of horse medicines by persons totally ignorant of veterinaay science and practice.—*M. S.*

◆

YORKSHIRE AGRICULTURAL SOCIETY.

The eighth annual meeting of this great society was held at Beverley, the capital of the East-Riding, where the principal show for the exhibition of stock, implements, &c., took place on the 6th ult.

This exhibition was one of the largest, so far as regarded the entries, both of stock and implements, which the society has ever held, indeed of the stock alone there were about 80 more entries than last year. The entries of horses were more numerous than on any former occasion—being no less than 137—of which thirty-three compete for extra prizes. These entries exceed by 37 those of the famous meeting at York in 1842, and those of cattle approach within three of the number then shown. Sheep and pigs were less numerous than on some former occasions. The quality of the various classes is, almost universally of the highest order.

We regret that the founder and liberal friend and Vice-president of the society, Earl Spencer, was prevented from illness from attending. Our regret is not merely that he was not present, but we regret still more the cause.

At the council dinner Mr. Legard, opening the discussion "On the best mode of preserving and applying Liquid Manure," entered into an examination of the chemical constituents of liquid manure. He quoted Mr. Alfred Gyde, of Gloucestershire, in proof of the enormous waste of this valuable manure, amounting upon a farm where 20 horses and 60 pigs are kept, to £200 per annum; but supposing only ¾ths of the waste could possibly be arrested, then the loss was £150 a year; but to be within the mark, this he halved and estimated the loss upon a moderate sized farm at £70 per year. He then minutely examined the relative efficiency and economy of gypsum and sulphuric acid as mixtures with the liquid manure, to "fix" the ammonia, or a fertilizing quality, which is liable to evaporate; gypsum is the least efficacious, but to it he gives the palm, as more economical, the extra expense of the sulphate being more than equal to the greater quantity of ammonia retained. He estimated the total cost of a tank to hold 12,000 gallons, at £17 8s. 6d., which was the price he had paid, and by various arguments strongly urged the preservation of this valuable manure, and that, till a better mode be found, by the use of gypsum as he had explained. His observations were illustrated by experiment upon his own property, and that of Sir Tatton Sykes, Bart., at Sledmere, Ganton, Fangfoss, Garton, Neswick, &c. He recommended the manure to be applied in the spring.

Mr. **Thompson**, of Moat Hall, agreed with Mr. Legard that gypsum was much better than sulphuric acid. He recommended the conversion of the liquid manure into compost, using gypsum to fix the ammonia in the liquid, and the transferring it to the dung heap, where it would never be lost. He recommended a simple wood pump, similar to those in tan yards, as the most economical—the cost for a 14 feet one being only £3.

Mr. **Dickinson**, who stated himself to be a Cockney, and not a practical agriculturist; a stable-keeper, and not a farmer, but one who therefore had great need of early food for his cattle, described the means by which his stables carry off the whole of the urine from the horses into air tight tanks contiguous to the stables; thus he excludes the air, as the means of volatilizing the ammonia. By means of a pump he draws off the liquid manure into a cart without suffering it to come in contact with the air, and when he applies it to the land, he takes care that the apertures from the cart are as near the ground as possible, say within six inches. Thus, upon a strong clay land, which the last preceding occupier gave up because he could not get crops from it, and with which he, Mr. Dickinson, was equally perplexed, he is reaping *ten crops a year*. He gets his first crop of hay in March, and never urines his land till he has got the first crop off; as soon as the crop is off he urines the land; he mowed the land again in March. The next crop he got in April, the next in May, and his fifth crop he got early in June; that was two loads per acre, whilst his neighbour was reaping his first crop of three loads per acre. He combated the principle of a preceding speaker, of applying the manure only in spring; why he had applied it in dry weather with these results; his opinion was that if you urine the land it does not want water; there is in his opinion a moisture from the atmosphere, which co-operating with the manure does all that is necessary. In July he had his sixth crop, of three loads, or 18 cwt. of dried hay per acre; and after that he put on no manure, as he thought the grass would run for seed if he allowed it. It was Italian rye grass that he cultivated, and he found by experiment that the urine would never let it come to seed. Well, last year he got ten crops; this year he has had four, and this is a specimen of the fourth crop (holding it up,) it is four feet eight inches high, and was as thick as it could stand upon the ground. The chairman requested the specimen might be handed up to him. Mr. D. with great pleasure took it up to the chairman himself.

Lord **Feversham**.—This is the fourth crop?

Mr. **Dickinson**.—It is.

Lord **Feversham**.—You have pulled it up by the roots.

Mr. **Dickinson** observed, he had done so, to shew the farmers that his mode of treatment had not exhausted the land. It was a well known principle that roots would not strike below the point where they found nourishment. (The specimen was then handed about and greatly admired.) Mr. D. continued—He had brought some other samples from land which is exhausted. Those were samples of oats and rye, and he stood on the table and exhibited them, shewing by their roots that they had exhausted the land. He had got a sample, sown only on the 16th April, upon the very ground which produced that crop of rye grass which had been produced. (Holding the sample up, which was taller than himself—a man of about 5 feet 8) "that," he said, "is Italian rye grass." The next thing he wished to explain was the mode by which he thought this effect was produced. His land was a rank clay, which would produce nothing good prior to the tests which he applied to it. He manured it with lime and sand, the refuse of London houses, and his opinion was that the

:ion of the lime produced a kind of
/ the admixture of the lime with
The ammonia is released by
of lime, and then the plant feeds
. Dickinson, whose speech ex-
aordinary interest, concluded
cheers.

NSFIELD, M.P., rose to corrobo-
acts stated by Mr. Dickinson,
1 he had seen, having had his
rawn to it by Lord Wharncliffe,
esident of this society, to whom
: was introduced by the Duke of
. His Grace a few days before
ibury meeting of the Royal Agri-
ociety had told him that there
1 growing the fourth crop this
h had nine crops last year. He
field) then called the day before
idon, and three days before the
y meeting, upon Mr. Dickinson,
igh the day was an incessant
m, he spent it in examining the
was greatly interested. After
ng several facts stated by Mr.
the hon. member observed that
1 150 horses feeding on this farm
another; the tanks were well
very economical, and cost much
Mr. Thompson's,—certainly less
This was the greatest produce
ad ever known to be brought
public.

KINSON offered some further de-
is farm and management and
In answer to questions, he stated
s 300 horses on his farm, and 100
e never eaten up four acres of
at. This manure had been tried
t success by a cottager. The
one horse will produce food for
or three and so on; the urine has
ying property. A cottager got
s per acre of hay by this treat-
slovenly managed.

course of the discussion, it ap-
iat Mr. Hobson, of Kettleby
n this neighbourhood, had suc-
ested Mr. D.'s process.

me other remarks, Lord WEN-
essed the gratification which he
ed from the discussion, and pro-
health of the chairman, which
lord acknowledged in brief but
erms, looking forward to the pe-
thousands and tens of thousands
this land, now waste, shall yield
crops for the people.

ed we go further with the account
nost interesting meeting: more
food for reflection and a wider field for experiment has been offered in this short discussion than we ever knew presented at any similar meeting of this or of any other society. We might publish the details of the show--we might give our readers the names of all the successful exhibitors of stock and implements, but would such publication further the GREAT CAUSE, even an homeopathic fraction as compared with what we have already given; all honor, say we, to Mr Dickinson, and to the Yorkshire Agricultural Society for making us acquainted with him. We must, however, refer our readers to the successful exhibitors of short-horns, in order that they may know the whereabout of the breeders. It is pleasant to have an easy reference to the parties most likely to accommodate us with a promising bull-calf when in need of one. Here then we have it:—

Class I. For the best bull of any age, £25; second ditto, £10. 14 competitors. First prize—C. W. Harvey, Walton, Liverpool; Walton (roan), bred by him, c. Dec. 13, 1841,—S. Locomotive, D. by Belvedere. Second prize—Richard Booth, Warlaby, Northallerton; Fitz-Leonard (white), bred by him, c. 12th June, 1843,—S. Leonard, D. by Young Matchem.

Class 2. For the best yearling bull, £20; second ditto, £10. 12 competitors. First prize—William Hutton, Gate Burton, Gainsborough; Emperor (white), bred by him, c. Feb. 26, 1844;—S. Lictor, D. by Gracchus. Second prize—The Earl of Harewood, Harewood House, Leeds; Ravensworth (roan), bred by John Emmerson, c. Nov. 18, 1843,—S. Magician, D. by Belvedere 2nd.

Class 3. For the best bull calf, £10; second ditto, £5. 10 competitors. First prize—Thomas Wetherell, Durham; Lord Buchan (roan), bred by Jonas Whitaker, c. Sept. 10, 1844,—S. Buchan Hero, D. by H. B., 3707. Second prize—George Wood, South Dalton, Beverley; ——(roan), bred by Thomas Hopper, c. Sept. 18, 1844,—S. Cavendish, D. by Archduke.

Class 4. For the best cow of any age, in calf or milk, £15; second ditto £5. 15 competitors. First prize—John Booth, Killerby, Catterick; Birthday (white), bred by him, c. May 20, 1841,—S. Lord Stanley, D. by Priam; in milk. Second prize—Joseph Dunnington Jefferson, Thicket Priory, York; Amazon (roan), bred by Samuel Wiley, c. Oct. 26 1837,—S. Belshazzar.

Class 5 For the best three-year old cow, in calf or milk, and having had a calf, £15; second ditto, £5. Three competitors. First prize—Hugh William Jackson, Leven Canal, Beverley;——(grizzled), bred by him, c. May 19, 1842,—S. Belshazzar; in milk Second prize—John Collins, Danthorpe, Hedon; Angelique Borel (roan), bred by him, c. August 11, 1841,—S. Nicholas Nickleby, D. by Grazier; in calf.

Class 6. For the best two-year old heifer, in calf; second ditto, £5. 7 competitors. First prize—Richard Booth, Warlaby, Northallerton:—(red and white), bred by him, c. May 8, 1842,—S. Leonard, D. by Raspberry. Second prize—W. T. Carruthers, Arthington-hall, Otley; Violet (roan), bred by W. Glaister, c. March 11, 1843,—S. Forester, D. by Fleetham.

Class 7. For the best yearling heifer, £10; second do. £5. 13 competitors. First prize—E. W. Smith Owen, Candover, Shrewsbury;—(roan) bred by him, c. Dec. 18, 1843,—S. Prince of Wales, D. by Chorister. Second prize—John Booth, Killerby, Catterick; Gem, (white,) bred by him, c. April 24, 1844,—S. Leonard, D. by Lord Stanley.

Class 8. For the best heifer calf, £10; second ditto,

£5. 11 competitors. First prize—William Brandham, Dringhoe, Burlington; — bred by him, c Dec. 7, 1844. Second prize—John Parkinson, Leyfields, Newark;—Ringlet, (roan), bred by him, c. Oct. 15, 1844,—S. Prince Ernest, D. by 2nd Comet.

Reviews, &c.

The Journal of the Royal Agricultural Society of England. Vol. VI., part I. J. Murray, London.

The first paper in the present part is a prize report, "*On the Agriculture of Nottinghamshire,*" by R. W. Corringham.

The writer proposes to divide the county into two districts, the one, which he calls the south-eastern, and is composed of various soils chiefly of a tenacious character, is divided by an imaginary line from the other, which he calls the western, and is composed for the most part of gravelly or sandy soils. This imaginary line would run from Nottingham to East Retford. The principal geological formation of Nottingham, according to the writer, is the new red sand stone of the western or sand district.

Mr. Corringham reports a great change since Mr. Lowe's report in 1794, when nearly the whole of this division was a tract of waste, the remains of the ancient forest of Sherwood; of this forest our author remarks:—

> As the forest was cleared of its stately trees it was left one wide waste so naturally sterile, as scarcely to have the power of clothing itself with the scantiest vegetation: even in the present day some districts remain which bear testimony to its former sterility. The fern, the gorse, the heath, and the delicate lichen, divide amongst them the soil; but nature has been forced to yield to art, and a noble triumph it has been, as well as one of great importance to the community at large. She has been gradually encroached upon and narrowed in her boundaries, until only so much is left as may serve to show what she formerly was. Where in former times only the rabbit browsed, large flocks of sheep are now fed—nutritious pasturage in the summer, and fine crops of turnips in the winter, furnishing to them an abundance of food, whilst these crops are succeeded every alternate year by cereal ones of the best quality.
>
> The inclosures are divided by quickset hedges and are for the most part large, though varying *in that* respect for the sake of convenience with the size of the farms, which are usually from 300 to 500 acres each: some few are, however, considerably larger, although not many exceed 1000 acres. The great proportion of the land which is annually sown with turnips, imparts to the country at all seasons, and especially so during the winter months, as compared with many counties, a pleasing aspect. The bright colours of their leaves, with the flocks of sheep spread over them, give to the gently undulated hills, as they succeed each other over all the western part of the county, a cheerful and highly domestic appearance; an appearance in short which is characteristic of England, and can be seen in no other country in Europe.
>
> Unlike the eastern half of the county, which falls gradually from the range of hills as they run almost parallel to the River Trent, and afterwards shelves down into alluvial beds which form the banks of that river, leaving the country nearly level to the eye, on the western side the hills assume a more marked character, attaining to a higher elevation, and are more rounded in their contour, yet seldom so high as to be seriously inconvenient to the farmer, at the same time never sinking into tameness of outline. The highest ranges, moreover, being planted, afford a valuable shelter to the corn as well as stock; and although they may harbour more of game and rabbits than the occupier might wish, still they are of unquestionable utility on the points to which we have alluded.
>
> Neither is this extensive district, forming an area of fully one-third of the county, by this transformation at all denuded of that natural beauty with which some sanguine minds may have been pleased to invest it when regretting the change, which by them is regarded as merely utilitarian: on the contrary, one can hardly picture to the imagination a more delightful country than the western half of Nottinghamshire, with its rising forests of thriving larch and oak timber, upon which are bestowed as much care as if they were but shrubberies instead of vast plantations resembling forests.

Much of this beneficial change is attributable to the Duke of Portland, and much also to the Swede Turnip, for says Mr C.:—

> It is to the introduction of the Swede turnip that the improved state of farming in Nottinghamshire must be mainly referred. This it is which forms the farmer's sheet-anchor during at least 4 or 5 months, and those the most trying of the year, for the support of his stock.

This invaluable root was, if we are rightly informed, introduced into this county about the commencement of the present century, by the late Colonel Mellish of Blyth; and small portions of seed were distributed by him to the

iculturists of that neighbourhood;
nproved mode of growing turnips
then quite unknown, the success
on the first essays of these gentle-
to have been very limited: neither
ults of their efforts of so much value
ls for whose sustenance they were
might have been supposed. Be-
plement for cutting the turnip was
thought of; and we have been in-
an eye-witness that the sheep to
were given, not being able, with-
lifficulty, to eat them—doubtless,
their imperfect growth—they were
m the ground, and pronounced to
respect to Colonel Mellish, a very
y article of food to be provided for
ch had not the power to make a meal
But as their culture was improved,
es at length were introduced for
, they obtained that place in the
the farmer which they well deserve,
er since held. Indeed, so highly is
turnip estimated on the light soils,
the criterion by which to judge of
of cultivation upon any farm: and
the farmers of these districts made
any deficiencies in their first at-
he success which has since crowned
; for we hesitate not to say that
s can be nowhere seen than in some
his county which in the recollection
ow living were deemed too poor to
penses of cultivation.

of this district is described as a
l, with gravel, and requires some
ord any indications of fertility—
dopted to insure which, with the
ropping, is thus described:—

-evident that land which was too
irst instance to produce anything
not without extraneous aid yield
cessary to improve its first condi-
to which, considerable tracts of
y too far removed from any large
otherwise might have furnished,
me measure, the means necessary
rovement; but through the medium
ge and other light manures, the
xtensive district has been within
century entirely changed.

re originally very cheap, and as
were strikingly manifest to all who
them, they were, until the increas-
for them raised considerably the
avishly used. It was thought by
the quantity used was increased,
uld follow in the same ratio; and considering how little science in its application to agriculture was then known, we need feel no surprise at an opinion so erroneous being entertained. At length, however, it became evident to some intelligent minds that they were riding too freely a favourite hobby; and it was asserted that the "land required change." The Duke of Portland was one of the first to direct attention to this fact, by publishing the result of experiments carefully made on his own farms, which tended to show that by repeatedly applying bones to the same soil, the good effects which resulted from their first application were almost or altogether wanting, owing to its repletion of phosphate of lime. Then it was that the farmer began to look out for substitutes, and hence have followed the long list of artificial manures in their various forms.

The course of cropping usually adopted in the western division of the county is the Norfolk, or four years course, namely,

1st year, turnips.
2nd year, barley.
3rd year, grass seeds or red clover.
4th, year, wheat.

Of the mode of managing these several crops, Mr. C. then enters into a minute detail, but as Turnips are so very much the foundation of all other good crops, we shall not pass over this portion of the subject without extracting Mr. C.'s account of the cultivation of them:—

As soon as the wheat crop is removed the preparation immediately commences for the crop of turnips, by giving the land one, two, or even more *orders* or workings, as it may be necessary or convenient during the dry weather of autumn. This is now most commonly done by putting on the scarifier, which is in general use throughout the district; the land being again crossed by the same, and afterwards worked by lighter harrows until the quitch grass is ready for being got off. It was formerly the custom to burn this on the ground after being raked together; but it is now more generally, by good farmers, carted away and put into a stack, and after remaining there until dry, used as a bottom for the manure in the yards, where it is useful in absorbing the drainage of urine.

This method of using the quitch-grass has been objected to, but we think without sufficient force, on the ground of its being liable to grow afterwards: to obviate this it is only necessary to see to its being dried before it is so applied.

It was the practice of an excellent farmer to apply salt by way of assisting the process of decay; and we doubt not that the idea is well worthy of the attention of all who desire to make as much manure on their farm as possible,—which certainly will be the object of every farmer who duly estimates its value.

If the season is favourable for cleaning the fallows, when they receive the last ploughing before winter, they are not unfrequently so perfectly tilled as to be in a fit state for the reception of the seed, which on the dry soils of Nottinghamshire is an advantage that can scarcely be too highly estimated, or too much sought after. As the winter rains then succeed, the land requires to be but little disturbed in the following spring, but remains cool, and is far more certain of producing a crop of turnips than if exposed by repeated ploughings during the drying months of the spring season.

In the winter months as the manure is made it is carted out of the yards into the fields where it is intended to be used in the approaching season for the turnip crop. There are various modes of preserving it during the interval which ensues. The one we are inclined to believe the best is, to have it thrown up into hills out of the carts by hand, and not, as is more frequently the case, run upon by the carts, to prevent thereby—what is, after all, an erroneous idea—its overheating. By throwing it lightly together the fermentation is equal throughout, and will be found so when it is again disturbed. Instead however, of allowing the gases to escape by exhalation, we would, by all means, recommend a covering of soil to be thrown upon it, sides as well as top, of not less than six inches deep: by which means those gases are repelled back upon the manure itself, and there fixed, instead of wasting themselves on the "desert air."

Manure so treated will require nothing more doing to it until within a fortnight or three weeks of the time of using, when it ought to be turned, and again covered with the same soil. The expense of covering is very trifling, the advantage attendant on it is very great. There is no need to cart the soil from a distance, but only to make a trench round the manure, the same as if covering potatoes for the winter.

The usual season for sowing the Swede turnip commences the last week in May, or the first in June, and continues till about the 20th of the latter month. If sown earlier they are liable, on the dry soils, to mildew; if later, they frequently do not attain the same size which they otherwise would. Some experienced farmers prefer a rather late season, from the circumstance of the late sown turnips being mostly of better quality than those sown earlier. Presuming on the land being perfectly clean, and free from quitch, the usual method is to throw open drills for the reception of the manure, which is done by a common swing plough, in most general use throughout the county, drawn by two horses abreast. The distance between the drills should vary with the quality of the soil, from 22 to 27 inches. The better the soil the wider the drills may be drawn, as the plants will be larger, and consequently require more room to expand in. The manure is then carted on by one-horse carts from the hills, as described above, in quantity from 10 to 15 loads to the acre, as it happens to be plentiful or the contrary, or as the farmer may wish to reserve it or not for other purposes. Women and boys then follow, for the purpose of thoroughly dividing and equally distributing it in the drills. If the manure has been well made in the yards, and afterwards treated in the manner we have described, it will present a black and oily appearance, retaining considerable heat, and giving every indication of strength and goodness. The ridges are then immediately split by another plough, covering in the manure as quickly as possible, which at this season of the year, when evaporation goes on rapidly, is an object of paramount importance. The Northumberland drill now follows upon the newly-made ridges, whilst the mould is fresh and moist, depositing, at one and the same time, *although at different depths*, the seed and such hand manures as may be used. The quantity of seed sown on the acre ought to be varied according to the state of the soil at the time of sowing, and the general character of the soil. On the light soils, if sufficiently moist, every seed may be expected to vegetate, and even then not less than 3lbs. ought to be sown; but on the stronger soils, which lie more open, and upon which it is, in consequence, more difficult to secure a sufficiency of plants, not less than 4lbs. should be sown.

We are aware that many will consider this an unnecessary quantity; but, supposing the whole to grow, which is seldom the case, it is only to introduce the hoes somewhat sooner. Plants are much easier thinned from a superabundance than supplied when wanting, particularly on dry soils, where transplanting is attended with uncertainty; and in favour of a large quantity of seed we may cite the Northumbrian practice, which is high authority on the subject.

Amongst a great variety of hand manures now in use the most common are bones ground either to what is called "dust," or to "half-inch," that is, left in pieces of about that size, and rape-dust, mixed with them, which serves to quicken into action their dormant powers. Many substitutes have, however, of late years been made use of, which we propose to notice briefly afterwards, and will only observe that the dressing supplied for the turnip crop forms a heavy item in the farmer's annual expenditure.

2 the present Mr. Milward informed us
spent that year at Babworth, upon 170
f turnips, from 50s. to 70s. an acre, and
ore than that sum, for the greater part
rop was swede turnips, which received
ton of rape-dust to the acre, at a cost of
a-ton, the price current for the year.
rnips were, however, good in proportion,
ch so that, the great breadth considered,
e quality of the soil upon which they
own, they were the best we have ever seen.
heard Mr. Milward observe that he has
upon the same farm, consisting of about
res of arable land, upwards of £600 in
cake in one year; and, supposing the
this cake to have been consumed in the
y beasts, and the manure applied to the
crop, the two items form together a very
outlay of capital.

it may be urged that the case here ad-
is an extreme case, and a solitary one,
at the farming of an individual forms no
n whereby to judge of a district. But
a remark we would rejoin, that it is by
ns a solitary case; that, on the contrary,
are many tenant farmers in the same
ourhood who are farming with equal
and that such a degree of cultivation
st the sand-land farmers forms the rule
than the exception.

soon as the young plants are large enough
it the horse-hoe no time is lost in stirring
ound effectually between the drills, as it is
that their growth is thereby greatly ac-
ed. They will now soon be ready for
g with the common hoe across the drills,
e purpose of thinning the plants. This
to be done by an experienced man, fol-
by a boy or girl, to leave single such
as he may not have been able to separate
he hoe. The usual distance at which the
are left apart is from 9 to 12 inches;
hoe of a size not less than 9 inches should
d if the plants are to have sufficient space
ch to develop themselves. This work is
ntly performed by the piece, at about 4s.
re, and cannot be done for less to allow
ges. In a few days afterwards a second
hoeing will be required, and not impro-
a third, as well as being gone over a se-
time by the hand-hoe, although at much
pense than the former one, the object of
ter hoeing being chiefly to eradicate any
which may remain.

season for sowing the common turnip in
eral varieties is from the middle of June
middle of July, although they are sown
e as August on land which has grown a
us crop of tares. These late turnips,
od management, form the most nutritious feed for the lambing ewes during the early spring season. A mixture of "white globe" and purple-top white" is often sown for early feed in the autumn. The "green globe" is an excellent kind to succeed, and possesses this advantage, that it will bear the winter nearly as well as the Swedish turnip itself. The routine of cultivation for the common turnips is similar to that pursued for the Swedes, excepting that they do not require the same high management that the latter do. Neither have they, in general, the same space allowed, either between the drills or the plants themselves. Some prefer to sow them on the level furrow, and not upon ridges: such is Mr. Milward's practice. After the land has been brought to a smooth surface it is manured, and the manure immediately ploughed in by a common furrow. The seed is then drilled in, and also the tillage, by one of the large Suffolk drills, at a distance of not more than 18 or 20 inches between the rows. Drilling on the flat has two advantages over the ridge method. The hasty showers in summer do not run from the roots of the plants so easily as when sown upon ridges; and it also admits of the turnips being drilled much nearer between the rows, which in the white turnip is of service, inasmuch as where upon ridges only onlp three rows could be had to secure the benefit of covering the manure better (which is the principal advantage possessed by the ridge system,) four may be included in the same space; and, although the turnips may be smaller in size, they are of far better quality. The horse-hoe may be used within drills of 18 inches, but not at less, without danger of injury to the plants, Two pounds of seed is generally thought enough of the common turnip to the acre.

The early-sown turnips are generally ready to stock during the month of September, which is mostly done by turning lambs upon them. These have been previously taught by the ewes to eat linseed-cake, and have an allowance of a quarter of a pound each until Christmas, which is then increased to half a pound, if they are intended to be sold fat in the spring: a practice followed now very often, at least as regards the wethers. The choicest grimmers are more frequently reserved for breeding ewes: a proportion of one-fourth or one-fifth being supplied each year, by which means the flock of ewes is always young.

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Quarterly Journal of Agriculture, &c. W. Blackwood and Sons, Edinburgh and London.

The opening of the present number, which commences the second volume of the new series, presents us with two letters from

Professor Johnston, the talented chemist of the Agricultural Chemistry Association of Scotland, written during visits made by him to Fife and Forfar, the first being addressed to Wm. M. Alexander, Esq., of Ballochmyle, and the other to David Milne, Esq., of Milne-Graden: from the former we make the following extracts, feeling sure as we do so that we are affording a treat of no common kind to many of our readers.

The professor, as he travelled between Kirkaldy and Colinsburgh, saw potatoes left in the drills through the winter, in the hope that they would, when taken up in the spring, prove better for seed. On this he remarks:—

This disease in the potatoe has already called forth many hasty opinions, almost all partially true, because founded on one or two facts, but nearly all unsound as general expressions of the truth, since they are contradicted by the experience of other practical men in other districts of the country. Such is, I believe, the case with the method of planting in autumn recommended by Mr. Gray of Dilston, and which we last year saw under trial on the farm of our friend Mr. Burnet of Gadgirth, in whose hands it failed; and such will be the case with the latest of the *infallible* cures which has been propounded, that of cutting the sets in autumn or winter, before the shooting of the tuber in spring commences. I was told in Dumfries-shire of extensive failures where whole potatoes were planted—a circumstance which shews that the mere prevention of bleeding by cutting in autumn is not to be regarded as a universal remedy. We are clearly unable, as yet, to assign either any general cause for the disease or any universal remedy. Something may possibly be suggested by the analyses of sound and diseased potatoes, for which the Highland Society has offered a premium, though in the present state of our knowledge upon the subject, even this is doubtful. The most that chemistry has yet done for this question is in the shape of suggestions for experiment; and, in the hands of Mr. Fleming, such experiments have so far shewn that top-dressing with saline mixtures, not only doctors the existing plant, but strengthens the tubers produced, so that, when afterwards employed for seed, they are less liable to failure than others to which, during ther growth, no saline mixture had been applied. It has occurred to me, in addition to the numerous other precautions hitherto recommended, that, if the potato sets, after cutting, could be steeped for a few hours in a very strong brine, containing also a little sulphate of magnesia, and then dried with gypsum, after Mr. Fleming's method, some advantage might accrue. Could you still try this?

On a very important and interesting subject, viz., the application of lime to the soil, the professor has the following:—

I am sure you recollect the very interesting meeting of the St. Quivox Farmer's Club, at which we were present in Ayr, in October last, when the subject of discussion was the use of lime, and the very contradictory opinions which the most intelligent practical men expressed on that occasion. One unacquainted with the subject, would have considered it very strange and puzzling to hear, as we did, one-half of the fifty farmers there assembled declare, from *their own experience*, that lime was of no use whatever, while the other half thought favourably of it, and some, who had been laying it on at a cost of several hundred pounds a-year, announced their intention of continuing to do so, because of the profit they derived from it. What would a merchant have thought of such contradictory opinions? How little skill, he would say, must these men have—how very uncertain the art they cultivate—how destitute of fixed principles on which a prudent man may rely!

And yet the stranger would err in thus supposing either that the art of culture is destitute of fixed principles or that those who prosecute this art are inferior in natural intelligence to the cultivators of any other art. The art is not destitute of principles nor the farmers of clear heads and strong natural sense; but these principles have never been distinctly stated to them—never put before them in the form of regular instruction, when their minds were ng and open, or, since they have been con- ed with the cares of life, exhibited as clear obvious source of larger profit. Diffuse nowledge of principles, and contradictory ions, as well as contradictory practice, will ppear.

ach case of success or failure, from any e of treating the land, will have its own ialities, and must be studied by itself; but obvious that if one soil contains naturally rge proportion of lime, while another con- almost none, the application of lime to the er must, as a general rule, be much less ficial than to the latter. Now such is the with the soil formed from the trap rocks. ntains naturally much lime. The rock of arres Crag, for example, from an analysis e in my laboratory, appears to contain in y four tons as much lime as is present in of pure limestone. There must be much, efore, in the soil that is formed from such a . Now in Ayrshire and in Fife, these s appear here and there in patches of greater ess extent over the breadth and length of counties; and there crumbling or *rotten* ions form isolated tracts of fertile soil. se who farm these soils may conscientiously correctly declare that, on their land, while have held it, lime has done no good; while r neighbours, who farm the cold clays of the ining coal measures may be applying it a *certain* hope of profit. The road-scrap- which the former despise, the latter may to act upon their grass-lands, or on their n crops, like a moderate application of l.

n connexion with this latter observation I y mention to you, as a curious fact, that the d-scrapings from Leith Walk and some ad- ing streets, which are *metalled* with broken s, are carted to the sea-shore at Leith, at an ense of £700 a-year, to be washed away and ted by the tide. It is even said, I do not w how correctly, that parties are prohibited penalty from carrying any of this refuse y for the purpose of applying it to the land. make them sensibly useful, these scrapings ld be laid up in heaps for a year, to allow the silicates they contain to undergo partial decomposition.

In the letter to Mr. Milne, we have the following, on draining and deep ploughing:—

It is but a morning's ride from Edinburgh to Dundee, and, in a couple of years more, it will be a two-hours' journey only; and yet at the back of the Dundee Law, improvement, during the past generation, has proceeded at as laggard a pace as in some more remote districts. There are some fine farms in the district, and some most skilful farmers; and if you were to go with me to Dundee market, I could pick you out twenty or thirty practical men, whom for knowledge and intelligence, and a desire to improve, ingrafted upon that rare and prudent temperament which makes every step they take a sure and safe one, you will not easily surpass in other parts of Scotland. And yet, in the neighbourhood of these men, improvement has been so slow, that even the example and stimulus of the commercial enterprise of Dundee has been unable to drain and subsoil the land from which its inhabitants draw the potatoes and the milk for their daily consumption. I fancy it is incorrect to suppose that large commercial towns sweep into their own vortex all the enterprising spirits and spare capital of their neighbourhood, and embark them in the prevailing and popular line of commercial speculation, and yet facts are not wanting which would appear to support such an opinion. How otherwise can we explain why those neglected tracts of land we have so often seen in the neighbourhood of Glasgow are allowed still to groan under their perennial load of rushes; that, while the merchants of Glasgow are lavishing their tens of thousands in draining the swamps of Demerara and Jamaica, the marshes around their native city should be permitted to shiver in primeval coldness?

But the drain is now beginning to score the slopes behind Dundee, and deep-ploughing to bring new food within the reach of the plant. In the course of our walk, we went into one of the fields of an adjoining farm, where the tenant, a most industrious man, was himself holding the plough. We found the land in fine condition, and the plough turning it over to a depth of ten or twelve inches, and I naturally praised his deep ploughing. "Aye, sir," he said, "the farm would hae just clean done me, gin I hadna deep-ploughed."

The thorough-draining now going on in this immediate neighbourhood, has been in a great measure either the actual work or consequence of the example of Sir John Ogilvie. We know it is but a few years since he became a farmer, and the way in which his attention was drawn to it shews how much good may be done, indirectly and by accident as it were—more correctly speaking, by the use of those various means of diffusing agricultural knowledge, which it is one of the main objects of the Agricultural Chemistry Association to promote. He was leaving Edinburgh one morning for home, when a friend put into his hand Mr. Smith of Deanston's pamphlet on draining, to amuse himself with by the way. He read it, and said, what could be done for his own land. On reaching home, he was waited upon by the tenant of one of his wettest farms, who wished either to give it up or to have a reduction of rent. He took the tenant at his word, allowed him to quit, and became a farmer himself. It was amusing, he told me, to see the shrugging of shoulders among some of the farmers he consulted, when he told them of his intention to drain what they were in the habit of considering dry land. But the perennial flow of water from the first drains he cut, and, above all, the striking fact that what were formerly the worst fields of the farm gave, after draining, the best crops—these quickly satisfied the most intelligent and the most money-making of his neighbours, so that some of these are now doing quite as much, and doing it as efficiently, as himself. It is astonishing how much good may be done, without any great exertion and without any expenditure, which a skilful tenant will not afterwards readily make for himself, by the example and presence of a resident proprietor who really knows something of the *principles* of agriculture.

I was much interested by a visit we paid to the farm of Mr. W. Cobb, one of the largest farmers in this part of the valley. I found him draining a field which, a few years ago, he said they would have considered dry enough. His drains were eighteen feet apart and thirty-three inches deep. From some remarks I had made in my lecture the preceding day, he said he should in future make their depth three feet, which, for stone drains, is sufficiently shallow. He does all his draining at his own cost—of course he has a nineteen years' lease—and he reckons, as the Berwick and Roxburgh farmers have told me, that his whole outlay is repaid by the increased produce in two or three years.

The subsoil-plough is here, as it ought ever to be, the follower of the drain. Mr Cobb has found the difference it produces upon his potatoes so great, that he proposes to subsoil his land every rotation. He is at present altering his ploughs, that he may be able, in going over his land again, to plough three inches deeper than before, making twenty inches in all. How can our Ayrshire friends ever get to this stage of improvement while the *bottoms* of their drains are little more than twenty inches from the surface? A well-known farmer in this district, Mr. Drummond of Craigie, remarked to me that the land in this county is not half ploughed with the common plough; I believe the same may be said of much of the land of Ayrshire.

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J. R. & A. RANSOME'S

WORKMEN'S FETE IN THE PARK OF WM. CHAS. FONNEREAU, ESQ., IPSWICH.

Some weeks since the workmen in the employ of Messrs. J. R. & A. Ransome, Ipswich, expressed a wish to provide an entertainment at their own expense, upon the occasion of James Ransome, Esq., having nearly arrived at the *fiftieth* year of his connexion with the business. This proposition emanated from workmen, some of whom had been from 20 to 40 years in the establishment, and was eagerly and warmly seconded by the whole of their fellow labourers. A fact like this is most honourable to all parties, as it must have been gratifying especially to every member of the firm, and the more so to the senior partner himself, as demonstrative of the appreciation by the workmen, of excellent nagement, and of high and honourable prin- le. But matters did not rest in this position. ssrs. Ransome, grateful for this intended rk of respect, most handsomely reversed the er of things, and with the consent of the pro- ers, became the hosts in place of guests, and ended the entertainment to their wives and ilies of all the persons in their employ.

At about one o'clock, on the 13th ult., the kmen all assembled in the lower part of rist Church Park, (which was kindly granted the proprietor,) adjoining the house. Each n was accompanied by his wife and children, walked in long procession to the dinner ilion.

At the eastern end of the fine bowling-green, ded by its venerable trees, a gigantic tent been erected. Above the dais were alle- ical representations, with the mottoes "Speed plough"—"Industry and Frugality: provide the evening of life"—"Learn war no more;" ures representing the forging swords into ughshares, surmounted by the Royal Arms, h the motto, "Long live the Queen." A at many elegant flags were exhibited, and a tty device formed in flowers, "Speed the ugh." A gallery was provided for the band.

Nothing could have been more admirable n the regularity which prevailed upon the mense multitude of men, women, and chil- n, taking their seats at the respective tables. hen all were comfortably seated at the tables, ich literally groaned with the weight of ex- lent old English fare, a signal was made, d James Ransome, Esq., attended by R. nsome, Esq., J. A. Ransome, Esq., the mbers of the firm, with a numerous company ladies and children, entirely composed of eir own families, took their seats upon the is. A short pause of silence having been de, dinner commenced. The repast being cluded, the public were admitted: the whole ce was soon crowded to excess. There could t have been less than 2,000 persons present, sides 3,000 or 4,000 more waiting outside, able to gain admittance.

After the usual loyal toasts, an address to e several partners in the firm was then read by Mr. Gill, one of the clerks in the establishment. It expressed the high gratification experienced by the workmen on the present happy occasion, and acknowledged the solicitude and care evinced by the firm for the welfare of all in their employment, those gentlemen having ever given practical exemplification of "the golden rule."

At the conclusion of the address, and as Mr. James Ransome rose to reply, the sun burst forth in all its splendour, imparting additional animation to the scene. The apartment rung with cheers, as Mr. Ransome, evidently labouring under strong emotion, replied. He reminded them that, for their successes, they owed the largest debt of gratitude to agriculture, and after remarking upon the pleasure he felt in meeting them on such an occasion, exhorted all to continue in the pursuit of religious, industrious, and provident habits, as the only sure safeguards against the perils of that season, when declining strength and advancing age unfit men for this world's labours.

This was followed by a neat speech from Mr. Robert Ransome, who bade them all hearty welcome, and exhorting them to continue in the path of duty, concluded by stating that, whilst amongst the workmen he asserted his dignity as a master, he still, at the same time, always wished to stand towards them in the character of friend.

These addresses were succeeded by an eloquent speech from Mr. Allen Ransome. He congratulated himself and them on the mutual good understanding that had ever existed between them, which had led to the present happy and interesting event. He then alluded to the growing spirit of intelligence which existed amongst the working-classes, as especially evidenced by their own institutions—of their self-supporting provident institutions, for sickness and old age—of their society for mental improvement, and now valuable circulating library, and to the spread of education, which had led to a more just appreciation than formerly of the duties and responsibilities that existed, in their relative situations, between the employer and the employed, or, in more familiar phrase, between master and man.—We regret we have not room to insert the whole of Mr. A. Ransome's excellent address.

These speeches were listened to with deep attention, and the tears which were seen to stand on many a furrowed cheek, gave evidence of the deep reality of their interest. Three-times-three, and long life and happiness to all present was then proposed by Mr. Richard Ransome, whose good-humoured countenance shone conspicuous above the heads of the crowd. Thanks were then given to W. C. Fonnereau, Esq., for his kindness in allowing the use of the park; succeeded by several rounds of cheers. In replying, Mr. Fonnereau remarked upon the respectability of the meeting, upon the order and regularity observed, and upon the great care always taken by Messrs. Ransome to improve the morals, as well as the physical condition of their workmen—a firm which never lost sight of Christian character and practice, whilst pursuing their interests as manufacturers.

Several hearty cheers where then given, and the company adjourned to the adjacent grounds, were various rustic sports commenced, terminating by a display of fireworks. Nothing could exceed the admirable good feeling and joyous hilarity which prevailed throughout the day; not a single instance of excess was to be found throughout the whole assembly, composed as it was, of many thousands, and the occasion will be long cherished in the remembrance of all present.

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ECONOMICAL CONSTRUCTION OF STABLES.—I learned, observes Mr. E. Bullen in the *Irish Farmers' Gazette*, whilst attending the great Yorkshire cattle show, that a Mr. Dickinson, of London, who was present at the council dinner, stables his horses in a particular manner, viz., in lofts or floors, one over another, like an ordinary dwelling-house, or barrack, which enables him to carry out his favourite system of economizing the liquid manure in the easiest manner; he is thus enabled to collect every drop that falls, and to convey it carefully to tanks on the ground floor, without having its strength or value impaired and wasted by contact with the other elements. A steady adherence to this system enabled him to make the remarkable assertion that, by saving the urinary secretions of one horse, he was enabled to grow grass enough for two; of ten horses, for twenty, and so on in proportion: so that from five or six acres of ground, treated in this manner, he was enabled to get a succession of grass and hay crops, sufficient for upwards of one hundred horses. In fact, so great was the affinity between urinary secretions thus applied, and grass, that he saw no limit to vegetable development, when submitted to this process.

BONDED WHEAT.—Lord John Russell has obtained a parliamentary document, which has been printed, showing the quantity of wheat in bond on the 1st of July, during the last eight years. The paper shows that, on the 1st July, there were 430,394 quarters of wheat in bond. The following is the account rendered from 1838 to 1845:—In 1838, there were of wheat and wheat flour in bond, 618,590 quarters; 1839, 51,217; 1840, 569,952; 1841, 579,872; 1842, 1,250,436; 1843, 297,416; 1844, 604,122; and in 1845, 430,394.

WEBSTER'S NEW HAND-PIPE AND TILE-MACHINE.—Her Majesty and Prince Albert, before their departure for Germany, being desirous of having the estate in which Osborne house stands, and which consists of about 1[illegible] acres, thoroughly drained, had Mr. Webster's new patent hand-pipe and tile-machine exhibited and explained to them. After seeing its operation, they expressed their approval, and instructed Mr. Webster to carry out their wishes.

THE LEICESTER MONUMENT.—The ceremony of laying the first stone of the monument, to be erected by subscription, to the memory of the late Earl of Leicester, better known in his day as "Coke, of Norfolk," took place on the 12th ult., in Holkham. All the towns and villages round contributed their quotas to the meeting, and beside the actual subscribers, who amounted to several hundreds, and their families, there were several thousands of farmers, yeomen, labourers, workmen, and many others. Lord Colborne acted the part of founder of the monument.

days ago, six beasts, the property ot of Southorpe, died in consequence of ten a quantity of oak-leaves and roots.

HAM FARMER'S CLUB.—The next f this club will be held on Friday, the eptember. The subject for discussion The most eligible system of working a farm, whether by yearly in-door or by week-men."

The Markets.

harvest than the present, so far as the ounties of England are concerned, has xperienced for many years. The pro- abundant WHEAT *crop, which in some he early spring foretold, has been bro- weather, and the farmer's hopes have ly destroyed. The heaviest crops will, well ascertained, afford the lightest pt for straw, of which there will be an every where, and should the present veather continue, the crop will not be one-half what under other circum- ought. A failure to this extent, in the oduction of England, must be sensibly markets, and although there is no up- ency at present, yet since our last spec- ntrived to force up the figure to about est white wheat in farmers' hands.— is little in demand; but holders are r the impression that the general crop ar's grain, must have sustained more or ge.—*OATS *maintain a high figure, 28s. en given for Scotch of good quality.*

aintains its value. The prices at foreign places are rising. The arrivals by om abroad are unimportant.—MUTTON *quality is a turn lower; prime sheep, naintain their value.—The* PORK *trade* LAMBS *are slow of sale, yet the prices a-head of those of last year.*

are in steady demand at the following

		s. d.		s. d.
hland Wool, per 24lbs..		9 3	to	9 7½
ghland do	....	12 0		13 0
ssed	do..unwashed ..	10 9		12 0
	do...washed	11 6		13 6
eviot	do..unwashed ..	11 6		14 0
Ditto	do..washed	13 6		17 6
White ditto	do	24 3		28 0

The public sales of foreign wool have gone off with considerable spirit; the colonial and Cape about 1d. per lb. abode the late London sales. The low wools only partly sold, there not being time after the fine were sold to get them fairly brought forward.

HOPS—*The duty is called* £170 *to* £175,000. *There was a rise since our last, which has been well maintained, although the accounts from the plantations come away better.*

LONDON, Aug. 25.	Per	Qr.
WHEAT, Essex and Kent, new, red	48	56
White	51	62
RYE, new	30	32
BARLEY, Grinding	25	27
Malting	30	31
Chevalier	31	33
Irish	—	—
Bere	25	—
MALT, Suffolk and Norfolk	55	57
Brown	50	53
Kingston and Ware	56	58
Chevalier	60	61
OATS, Yorksh. & Lincolnsh., feed	23	24
Potatoe	24	26
Youghall and Cork black..	20	21
Cork, white	22	—
Dublin	21	22
Black	21	22
Scotch feed	24	26
Potatoe	25	28
Limerick	22	24
BEANS, Tick, new	38	40
Old, small	40	42
PEAS, Grey	38	40
Maple	38	40
White	38	40
Boilers	38	40

SEED, Rape, 27*l.* 28*l.* Irish, 22*l.* 26*l.* per last.
Mustard, White......12 15
Brown ....10 12 per bush.
FLOUR, Town-made 51 —
Suffolk.... 42 — per sk. of 280 lbs.
Stockton and Norfolk .... — 42

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	46	50
Hamburgh	38	—
Rostock	42	44
BARLEY	19	23
OATS, Brew	17	18
Feed	14	17
BEANS .... —	28	29

Peas	28	32
Flour, American, per barrel	24	—
Baltic	21	—

LONDON AVERAGES.

Wheat	12071 qrs.	£3	0	1
Barley	161	1	8	7
Oats	17230	1	2	3
Beans	737	1	19	5
Peas	115	2	0	11
Rye	—	0	0	0

SEED MARKET.

	s.		s.
Canary, per qr.	44	to	48
Carraway, per cwt.	44	to	48
Clover, red, English	45	to	50
„ „ Foreign	40	to	48
„ white, English	60	to	62
„ „ Foreign	50	to	62
Coriander	12	to	18
Hempseed, per last	35	to	36
Linseed Cakes, Eng. p. 1000	£11	to	£11 5s.
„ „ Foreign, p. ton	£7 7s.	to	£7 10
Mustard, white, per bushel	10	to	14
„ superfine „	12	to	16
„ brown „	12	to	16
Rapeseed, English, per last	£26	to	30
Tares, English, spring p. bushel.	4s 0d	to	6
Foreign „ „ „	3s	to	5

LIVERPOOL, Aug. 26.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℔ 70lbs.	8	6	9	3
Ditto, red	8	0	8	4
Irish white, new	8	0	8	6
Egyptian	6	8	6	10
Oats, Eng. mealing, ℔ 45lbs.	3	6	4	0
Irish	3	3	3	4
Welsh	3	1	3	3
Barley, Eng. malting ℔ imp. qr.	30	0	32	0
Grinding	0	0	0	0
Irish and Scotch	4	0	4	6
Rye, per imp. qr.	34	0	35	0
Beans, English, per imp. qr.	36	0	40	0
Irish and Scotch	34	0	38	0
Foreign	38	0	40	0
Egyptian, per 480lbs.	34	0	35	0
Peas, English, per imp. qr.	38	0	40	0
Foreign	37	0	38	0
Canadian	35	0	36	0
Malt, per imp. qr., fine	60	0	62	0
Flour, English, per 280lbs.	45	0	48	0
Irish	43	0	47	0
Foreign, duty-paid, per 190lbs., U.S.	31	0	32	6
Canadian	31	0	32	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	28	0	30	0
Irish	26	0	27	6
Indian Corn, per 480lbs.	19	0	21	0

PRICE OF AGRICULTURAL PRODUCE

LIVERPOOL, Aug 26.

Hay, best p.st.	1s	1½
Clover ditto	0	0
Green ditto	0	3½
Vetches	0	3
Straw.		
Wheat	0	6½
Oat	0	6½
Barley	0	7

Potatoes.	s.	d.
Short tops	1	5
Red apple	0	0
Cups	1	3
Cattle	1	6
Turnips pr ton	26	0
Carrots	37	0
Manure	7	0

Cattle Markets.

LONDON, SMITHFIELD.

Aug. 25, 1845. ℔ st. of 8 lbs.	s.	d.		s.	d.
Inferior coarse beasts	2	8	to	3	0
Second quality do.	3	2	to	3	4
Prime large Oxen	3	6	to	3	10
Prime Scots, &c.	4	0	to	4	[illegible]
Coarse and inferior Sheep	3	4	to	3	[illegible]
Second quality do.	3	10	to	4	[illegible]
Prime coarse woolled do	4	6	to	4	[illegible]
Prime Southdown do	4	10	to	5	[illegible]
Large coarse calves	3	6	to	4	[illegible]
Prime small do	4	4	to	4	[illegible]
Large Hogs	3	0	to	3	[illegible]
Neat small Porkers	3	10	to	4	[illegible]

LIVERPOOL, Aug 25.

	s.	d.	s.	d.
Beef, per lb.	0	6	0	[illegible]
Mutton	0	6½	0	7
Lamb	0	6½	0	7

MANURES.

Subjoined are the prices of several sorts of manure:—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. per cwt.
Guano, 10s. to 12s. per cwt., according quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. per landed and housed, 38s. to 42s. per
Nitrate of Soda, 16s. 0d. (duty pd.) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per sufficient foı three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 6s. per cwt.
Compost, £3. 12s. 6d. per hhd. sufficient three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphuric Acid, 1½d. per lb.
Sulphur for Destroying Worm on Turnips, per cwt.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

OCTOBER—1845.

E DRAINAGE AND INCLOSURE ACTS.

ING the facility with which large reme- l measures have been carried out through instrumentality of Commissioners, and great saving of expence which has ac- ed to the country, by investing with al- st legislative powers, those gentlemen o as such have been, from time to time, pointed to carry out some of the provi- ns of the Reform Bills, the Tithe Com- tation, and the Poor-law Amendment ts; observing, also, the large amount of ney expended every session in the ap- cation to Parliament for powers to effect al Drainage and Inclosure of Waste nds, the Government, urged thereto by ne of the leading English agriculturists, ve passed the Bills now before us. The chinery of them is somewhat cumbrous d expensive; but as compared with the most ruinous expence of a separate Act Parliament for each tract of country losed or drained, the cost of proceeding der these acts is not for one moment to regarded. There are perhaps some un- cessary steps required to be taken, and ich may be found, in practice, to be un- cessary; and there are some powers ich we feel to be still wanting, in order render them as beneficial to the country we think they ought, and may be made be

In going through the Acts, we will notice these points particularly; at present we may observe generally, that their provisions are well calculated to promote the improvement of the productive capabilities, and consequently, the value, of the soils of this kingdom.

In order to this, however, we must not close our eyes upon the fact that money is in many cases wanting; capital is absolutely necessary to carry out the designs of those landowners and agriculturists who may wish—as who would not?—to avail themselves of the provisions of these two Acts of Parliament; but many, particularly of the smaller proprietors, have it not: they have acres which ought to be improved, but no means wherewith to execute the necessary improvements, without having recourse to loans. We are aware that there is much capital in the hands of agriculturists, but how to make it *generally* available, and how to induce others, (who, though not agriculturists, will prefer a safe investment for their capital, at a moderate profit) to invest it in the improvement of the soil? By *moderate* profit we ought here be understood to mean moderate, as compared with those profits which speculative risks afford. Upon this part of the subject, we cannot do better than refer our readers to a paper addressed to "LAND

OWNERS AND CAPITALISTS, upon the working of Joint Stock Companies for the Draining and Improvement of Lands," which appeared in our 8th No. p. 104, and which was copied out into several Scotch papers of that date. If there can be anything which can be added to that exposition, it appears to us to be, that the value to a borrower of money, of a system which shall provide for the repayment of his loans by instalments, is not sufficiently set before the reader. We will, therefore, illustrate the advantage of this by the instance of a tenant farmer, who, with a capital of £3000, is about to enter upon a farm of which he has either a lease, or such other positive assurance as will induce him to thorough drain it;—its extent is 300 acres; he cannot, therefore, taking £10 an acre as the average capital required for carrying on his business, spare the money necessary for effecting the drainage of it, which it is his interest to have done as speedily as possible, for the plain reason that every year he neglects to have it done, he is losing the benefits to be derived from it in increased crops, facility of working, and saving of manure, whilst the term of his lease is running on to its expiration. Not being able, then, to carry out his object by his own means, he applies to a Draining Company which executes the works for him in the most scientific, approved, and economical manner (taking a proper security for the outlay), and thus enables him to repay, out of the increased production of his farm, the annual instalments of the cost incurred, together with a moderate rate of interest—an advantage which neither money-lender nor banker will afford him.

The same advantages will accrue upon a larger scale to the landowner, whatever his interest in the lands may be—he has power to charge the cost upon the estate, and he begins immediately to reap the benefit of it.

ON THE CUTTING OF WHEAT IN THE RAW STATE.

HAVING devoted my attention to the subject now agitating the agricultural world, namely, the "Cutting of Wheat," I claim the privilege, through the medium of your excellent publication, to offer a few observations, which I think of importance to the *rent-paying farmer*. There may be some, doubtless, who will conclude that I am of that school who, when a new practice is brought forward, (I am wrong in using the word "new," as applied to this, more particularly—the theory and practice is old) endeavour, before they themselves have tried it, to throw a damp upon it; this proceeding generally from bigotry and prejudice, and often on account of the theory or practice emanating from one not brought up from his childhood to agriculture, who may nevertheless be able to suggest many excellent improvements. Such a conclusion would be a mistaken one; my object being rather to assist in establishing introductions, providing they are correctly and accurately tested before adopted, especially by those whose affairs are such as to require the most cautious and careful investigation.

To proceed, then, from the statements and accounts which have appeared in our agricultural publications, I have not met with any experiments having been made, where the corn cut in the *raw* state has been harvested and sown for a succeeding crop; my idea being that wheat, cut in the *raw state*, will be incapable of vegetation—the grain will be imperfectly consolidated, and in the soft or milky state, showing that communication is still going on between the earth and grain.* I think, Mr. Editor, I should be going out of my latitude were I to quote from a botanical author of great authenticity, the following, respecting the fertilising

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* Our correspondent must be aware that the best authorities upon this subject agree that it is only when the connection between the earth and the grain in the ear has *positively* ceased that the reaping should commence. —ED. F. H.

the flowers of the cereal grasses:—"The
dust or pollen contained in the anthers,
hrown upon the sumit of the pistil. The
nit is moist, and the moisture acting
n the particles of the pollen, occasions
m to explode and discharge a very sub-
vapour. This vapour, passing through
minute tubes of the pistil, arrives at
embryo seeds in the germen, and fer-
zes them. The seeds of many plants
re been observed to become, to all ap-
rance, perfect without this communica-
n, but these seeds are incapable of vege-
ion." Such being the case, I am of
nion that, after the operation just quoted,
onsiderable degree of heat is indispen-
le for the seed arriving at the proper
te of vegetation. Wheat, we know, is a
in that is enabled to stand drought and
at better than any other. From this fact,
hink we may safely conclude that much
at and air is indispensably necessary for
perfection of the grain.

Wheat, cut *raw* or *green*, would resemble
y-making, *drying* rather than ripening.
nother consideration is the weather,
ich, while cutting raw, may turn out
t or damp. Every farmer knows that any
d of grain cut prematurely in damp or
angeable weather, is liable to be consi-
rably more damaged than when cut ripe.
my brother farmers in this part of the
ntry, (Lancashire) I would remind them
our foggy and damp nights, which take
ce in the month of August, but princi-
ly in September, what degree of heat
wheat would get in the day, would be
nteracted by the damp at night. The
n, by being placed, as soon as cut *raw*,
he stook, or as we term it, ryders,—(I
it for granted it is so harvested; if I
wrong, it proves the necessity of more
rate and detailed accounts)—must ne-
arily be deprived of a considerable de-
of sun and air, which it would receive
h better by being allowed to stand
in a day or two of being ripe. The
n may possibly have a more bulky appearance; nay, I will admit, that the skin may be clearer, also less bran, &c. If this is the point to be aimed at, then, I say, all credit is due to those individuals who have so ingeniously proved that wheat is capable of being produced with less bran, &c. &c. but the question with the farmer is, as it is respecting fat cattle, is it a decided benefit? is it the safer, better, and more profitable way of proceeding? This question must be answered by experiments made with *accuracy*, and upon a moderate scale.

Allow me, then, to suggest to those individuals who take an interest in, and consider that the practice just alluded to is a benefit, (and to all such our best thanks are due for the many useful suggestions which, through the means of your valuable publication, we are put in possession of,) to sow with the same seed a statute acre and a half, part to be reaped in the *green or raw state*, about three weeks or so before ripe (according to the statement before me;) then when changing, and lastly when ripe, and no more than ripe; the mode of harvesting, the state of the weather, and other cumstances; these samples to be sown in equal quantities, and not less than half an acre; the time of sowing noted, as also description of land, sort of wheat, whether pickled, and every other particular connected with the sowing; and lastly, the time of reaping, &c. The crop secured to be thrashed and ground, with weight, appearance, &c. By this plan, I think, Mr. Editor, we should fairly test the system, and if found to be an improvement, let it, as far as can, be adopted. Before I close, allow me,—although I have gone beyond my intentions,—to quote a passage from the illustrious Davy:—"Nothing is more wanting in agriculture than experiments, in which all the circumstances are minutely and scientifically detailed." In the meantime I shall request my friends to proceed as stated, and shall in due time furnish you with the result.—*A Retired Agriculturist.*

STALL-FEEDING CATTLE.

Much has been said in the *Herald* lately, on Soiling or Stall-feeding Cattle. It is very seldom that I see a fair statement, or the subject fairly argued. "Hark Forward" is evidently not a practical man, and shows all the bright side, but none of the darker shades. "Festina Lente" is on some points wilfully blind to some of the advantages of the system. In my opinion the best letter on the subject is that of Mr. James H. Shenton, in the May No. page 68. My intention here is to state both the advantages and disadvantages of the system, to weigh both in the scales of justice, and give you the balance. In going through this business, I may perhaps remove the bandage from one of my eyes, and keep it too much upon one end of the balance, and in that case, must recommend every farmer to weigh for himself. I will endeavour to keep the bandage as tight as possible over both eyes.

One advantage is, that more stock can be kept on the same land. Mr. Wild, of Weaverham, has not over-rated this, even supposing the land is in as high a state of cultivation when pastured, as when the produce is cut for soiling. But in making comparisons, the advocates of soiling seldom do allow this. They generally compare the produce of a poor pasture with the same extent of highly cultivated land, which is very unfair. What could a farmer do with soiling his stock from nothing but poor grass land? Before soiling can be commenced, the land must be put into a productive state; and pasture land put in high condition, will keep more stock than if poor, is plain to every one; but the comparison can only be fair where the land in both cases is in the same condition.—However, I am satisfied that, where the condition of the land is the same, a third more stock may be kept by soiling.

Stall-feeders say, that stock kept in the stall will *feed faster*, or *milk better* than when at pasture. This will depend upon circumstances. In hot, or cold and rainy weather, this is true; in mild temperate weather, it is not true, if other circumstances are the same. And here, again, the stall-feeders, or rather, I should say, theorists, do not state things fairly. If a cow be kept on clover in the stall a week, and then on pasture a week, to try the difference in her produce, she ought to pasture in clover and not on a piece of poor pasture; and, in *this case*, the experiment would not be fair, except the *weather* was the same under both cases. For cattle to run out of doors in the winter season, is folly, to say the least of it, if the land be clay, clay loam, or a black soil. If the pasture be dry and sandy, there can be no harm in cattle going out a little in the middle of the day. Cattle going upon strong land in the winter is of no use to them, and does injury to the land for the succeeding summer.

By soiling stock a far greater heap of manure is made in the course of the year. This is considered by soilers to be one of their great guns in argument, and yet it is the weakest, or one of the weakest arguments they make use of. It is quite true a far greater quantity of manure is made by soiling stock than by pasturing it; but then *more is required.* If the produce be carted off a field to the farm yard, the *manure* made from that produce, together with the *urine*, must be carted *on to the field again*, or the field will be *poorer than it was.* If cattle pasture the produce of a field, both the dung and urine are left upon it, and the field remains in the same state of fertility, or poverty, in which it was before the pasturing commenced, except the land be *naturally a very bad soil.* Land, which is a deep rich soil, will improve in richness by pasturing, but will never do so by mowing or ploughing, except the produce be returned to it in the shape of manure, solid and liquid. If a stall feeder purchase a great quantity of provender for his stock, he will enrich his farm more if ll the manure and urine be applied to it, han if pastured. But in making a comarison, this would be unfair, except maure was purchased to put upon the land astured. It is said that manure and urine ropped upon land by cattle pasturing, do ittle good. This is not true. Why do ndowners tie their tenants to have a cerain portion of their farms in pasture?—Vhy, from the well known fact that pasuring land does not impoverish it. To mange pasture land in the best style, it should irst be put in good condition, and made ry. It then requires a little care every ear, to pull up any weeds which may pring in it, and keep the droppings proerly spread. If a farmer be too careless r too indolent to do this, he would be ompletely unfit for a stall-feeder. He ould make sad work under that system. e would waste his cattle food, their dung nd their urine, the land, and himelf would oon be brought to poverty. A careless or ndolent man should never be a stall-feeder. t may be asked, why are there so many oor pastures in the country? Because ey are made so by ploughing and mowing efore they are laid down to pasture.—*o be continued.)—W. Rothwell. Winwick, ptember 25th,* 1845.

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LIQUID MANURE TANKS.

IMPLEX,' in your August number, proses a few agricultural queries about liquid nure tanks, to which I have replied as lows:—

1. A round tank is both cheapest and ongest. Brick on bed in a round tank, ll backed with clay, and cased with man cement, has been proved to be ite sufficient for a tank to contain 13,000 llons.

2.—As *Simplex* has not stated what size d sort of a farm his friend occupies, I nnot give the dimensions of tank or tanks quired.

3. It is not essential that while the liquid fermenting the tank should be air tight.

4.—Lime would act quite reversely by liberating the ammonia. Sulphuric acid is much recommended as a fixer of ammonia, but it is a dangerous agent in ignorant hands, who by pouring more into the tank than is necessary for the fixation of the ammonia—and it is almost impossible to know the quantity required, owing to the varying strength of the liquid manure during its collection—and an excess of sulphuric acid or oil of vitriol, would act on the tank to its destruction. I would therefore recommend ground gypsum, though its effects are much less powerful, it will fix the ammonia to a certain extent, and when used in excess will do no injury; but the tank would require to be cleaned out once or twice in the year, as it gets filled with carbonate of lime. Gypsum is also much easier managed in compost heaps than either sulphuric or muriatic acid, and should be always strewed over every manure heap during fermentation.

5.—The criterion by which to judge is when effervescence ceases, or the gloubles which rise to the surface disappear.

6.—It is requisite to have the water at command in a *cistern*, that it can either be turned off or into the tank at pleasure; for instance, if the liquid was wanted to be applied to grass, or any crop during dry weather, it requires to be well diluted.

7.—The liquid manure, after fermentation, is most profitably applied to grass land, if the soil be naturally thoroughly dry; and where not it must be properly drained and opened, that its effects may be beneficial.—*W. Ewing, Strageath, Crieff, Perthshire.*

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IMPROVEMENT OF PEAT BOG.

I AM in possession of a few acres of Waste Land,—a Peat Bog which I am bound to reclaim. I am surrounded by wealthy neighbours no two of whom can agree upon the best mode of cultivating it, and most of them by their own admission have actually thrown away large sums of money upon it in their early proceedings. I am convinced I have wasted a considerable sum myself in a similar manner. I am now getting into years, my little capital is exhausted, and my regular supply of means very small. Will any of your readers or correspondents oblige me with an answer to the following queries, and give the reasons on which their answers are founded.

1. I observe that some of my neighbours having drained the Bog, lay the marl upon the ling—others fire the ling and then lay on the marl—a few fire the ling, push plough the surface and burn the sods, and then marl; others again turn the ling under, some with the spade, others with the plough, previous to laying on the marl, whilst some actually remove the ling and the surface clod altogether before they deposit the marl. Here are at least five different methods in one of the early stages of cultivation: they cannot all be equally efficient. The last is the most expensive, and to me appears the most unlikely. Now upon the principles of agricultural chemistry which of these methods is likely to produce the best practical results?

2. The land being marled, the next consideration is manure. Many of my neighbours have brought night soil from a town at some distance at an enormous outlay. It is true that generally speaking it answers well, better than anything which has yet been tried in our neighbourhood, especially the first time the bog is broken up; but the cost of transit is so overwhelming it is next to an impossibility for a person in humble circumstances to avail himself of it. Presuming, however, upon the theories laid down by Liebeg, Bernay, Cox, Maddick and others, who have followed in the same track, I feel satisfied there is yet a way left open for myself and others like me: but amidst the multitude of artificial manures so strongly recommended, I am at a loss which to choose. Will some kind friend inform me in your columns which I should select for potatoes, oats, wheat, peas, clover and grass, respectively, for I have already learned that each of them requires a different manure, yet I am not a sufficient judge to determine the one most proper.

3. When it becomes necessary or desirable to break up a pasture on a peat soil, is it proper to turn the grass under, or to push plough and burn the sods; there is such a variety of opinions upon the subject, that I am quite bewildered. A scientific reply to this query will be of essential service to many besides myself.

Perhaps you will be kind enough to say where the Giant Cinquefoil and the Bockhara Clover Seed can be procured.—*Enquirer.—Manchester*, 16*th Sept.* 1845.

[1st. Burn the ling but not the turf, plough under *quick* lime. You may then marl and manure in the usual way, provided your drainage is effective.

2nd. Rely upon home-made manure—collect every scrap of excrement and urine—shelter it from rain and exclude the air as far as may be. Add to it all the decaying animal and vegetable substances you can find—throw in the washing from your house, turn now and then—make a compost with some of your peat soil and you will be more sure of a crop of any kind, under judicious management, than by the aid of artificial manures.

3rd. Never burn your sods, paring and burning belong to the barbarous age of farming. If you pare let it be for the purpose of mixing in compost heaps the sods (when partly decomposed) with the manure, treated as recommended in No. 2.

4th.—Giant Cinquefoil and Bokhara Clover may be had from any respectable seedsman—the former, where a suitable soil presents itself, makes excellent hay; the latter is useless, either in a green or dry state, for feeding purposes, as neither cattle nor horses will eat it.—**Ed. F. H.**]

AGRICULTURAL QUERIES.

R. Cox, in his *Agricultural Chemistry*, ys, that both lime and wood ashes will compose the salts of ammonia. Does e ash of turf peat possess the same pro- rty? He also tells us that *wood* ashes e as unsuitable for night soil as for guano; t it is a fact that *turf* ashes mixed with her urine or night soil retains the am- onia—how is this to be accounted for?

The same writer frequently mentions psum, burnt gypsum, and plaster of ris. Are these one and the same arti- s, and if not, what is the distinction be- een them? Will marl serve as a substi- te for gypsum? and if so, what extra antity of marl should be used?

The nitrogenous phosphate manure is ongly recommended by the same excel- t writer, but he does not tell us what antity to apply to the statute acre: will me one who has made use of it inform e writer what is the necessary quantity? gain he speaks in the very highest terms sulphate of ammonia, but fails to tell us e quantity or what particular crop it is ost suitable for. Will some of your cor- spondents supply this defect?

Nor is this all. He tells us that salt and ked lime mixed together, and covered for a few months forms an excellent mpost for lime plants. Be kind enough, . Editor, to inform the ignorant portion your readers, what is meant by lime nts; whether the two ingredients are to used in equal quantities, or whether, as ave elsewhere read, two portions of lime l one of salt, and what quantity of the npost to the statute acre?

nce more, Mr. Cox recommends that d and liquid excrements should be mix- with dried plaster of Paris, so as to form tiff mass. It is presumed he intends for wheat and oats, &c., although he s not distinctly say so; but the question in recurs, how much in weight or mea- e?

hould Mr. Cox publish another edition of his very valuable little work, it is to be hoped he will supply the defects alluded to. In the meantime the writer will be greatly obliged by answers from any one who can give them.—*P. Salford, Sep.* 18, 1845.

[Our correspondent's queries are for the most part answered by Mr. Cox himself. With respect to the substitution of marl for gypsum, we are of opinion that no quantity of that natural earth will supply the place of gypsum, either in its natural or artificial state. Marl acts mechanically upon a light soil by preventing the sinking of the manure applied to it below the reach of the roots of plants, and it is also attractive and retentive of moisture. Good marl also contains a large portion of lime, which upon a heavy unlimed soil is itself highly fertilising. But hear Mr. Cox.]

I am glad of the opportunity afforded me of applying to your correspondent *P. Salford*, and aware of the value of your space I shall be as concise as the attempt to make myself clearly understood will allow me to be. Before I give an answer to those questions, however, I must be allowed to make a few observations for the purpose of making one of those questions better understood. It is not a settled question as to whether ammonia constitutes the real value of some manures, especially guano and night soil or not. There are many and good reasons for supposing that it does not, most of those reasons are based upon well-established facts, which have proved that the addition of substances both to guano and night soil, which must have caused the expulsion of the ammonia, have nevertheless rendered both of those manures far more fertilizing than they shewed themselves to be without those additions, therefore it is wiser to make the additions than not to do so. Most of the turf ashes retain the ammonia in a fixed state, because they are free from alkaline carbonates; the latter exist freely in most wood ashes, and hence the difference in their action. For the purpose of consolidating moisture, marl or even burnt marl, would not prove a substitute for burnt gypsum or plaster of Paris. Gypsum as dug from its beds exists in combination with water but is termed plaster of Paris, when the latter has been expelled by a high temperature, it is a sulphate of lime. The nitrogenous phosphate manure has been employed with great success in quantities varying from three to five cwt. per acre, but I am unacquainted with the quantity of sulphate of ammonia necessary for exhibition. Your correspondent wants to know what is meant by lime plants, had he studied the tables at the end of the book he would have found that the ashes of plants vary exceedingly in the nature of their components, the ashes of some plants abounding more in silica than anything else, whilst in others again the alkalies predominate, and in some such as peas, clover and tobacco, lime is the principal constituent. Hence the origin of the term silica potash or lime plants. As to the proportions to be used of salt and lime it is not very material whether equal proportions or a preponderance of lime be used, the grand object is to decompose the salt, and the large proportion of lime will sooner effect the object. Mr. Cuthbert Johnston has written a pamphlet on that subject, to which I refer your correspondent. The last query relates to the employment of night soil, combined with plaster of Paris as a manure. It is adapted for the nutriment of any plant which affords food for man, but it is specially adapted for corn crops, as it abounds in the phosphates necessary for the maturity of the seeds.—*George Cox.—London,* 28, *Holborn Hill, Sept.* *25th,* 1845.

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INSURANCE OF CATTLE.

As you have devoted the leading article in the *Herald* for August to a subject of the utmost importance to the farmers of this district, particularly, viz., "The insurance against loss from the deaths of cattle by disease or accident;" you will pardon me if I submit to you that in a note which is appended to this article, you appear to have fallen into an error of a discription likely to be injurious to the character and interests of the "Farmers' and Graziers' Mutual Cattle Insurance Association." You say, "by the bonâ fide value, the market value of the animal at the time of death is meant, and not that at which the animal is insured; how the market value of a sick or dead milking cow is to be estimated we confess we are at a loss to discover." I have never understood that such a mode of proceeding as this was contemplated by the "association." Indeed, the plan is too absurd ever to have been rcognised by the public, much less to have met with their support and encouragement.

According to the above rule, the case would stand thus: A insures his cows, say at £12 each, one of them is afterwards affected by some slow and perhaps unusual disease—she is carefully attended to, at *considerable expense*, and she lingers on two or three weeks, becoming every day more worthless. She dies, and is not worth more than her hide and *carrion* carcase, say 20s. Is 13s. 4d., or two-thirds of her value, as stated in your note, all that A is to receive? The idea is too preposterous to be seriously entertained for a moment. The impression on my mind is that A would receive £8, being two thirds of her average value, besides 6s. 8d., being one third of the value of the skin and carcase; moreover, in such a case as the one I have stated, there would be *nothing* but the price of the skin and carcase to divide.

The association in question, in taking an insurance, direct the valuation to be made by their inspector in the following manner. First, the *actual value* at the time of inspection, say £12, then, the increased value, or the value which the animal is likely to attain at any time during the 12 months for which it is insured, say £16; the average will be £14, and at this price the

surance is effected. The same rule is
served as to the probable decreased value
animals during the same period. This
actice comes nearly up to Mr. Palin's
tion, and if the animals can be identified
the inspector, is more remote from
lucement to fraud on the part of the
sured, and it guarantees equal justice to
th parties.

I am acting as agent for the "Mutual,"
the Stockport district, and therefore am
ble to the charge of partizanship; I beg
wever to assure you that I write with no
terested motives or feelings. I shall be
ost happy to learn that the success of the
Agriculturist" is commensurate with its
orts of usefulness; there is a large field
en, and "ample room and verge enough"
r both Companies, and as among so nu-
erous a body as the farmers of this king-
m there must necessarily be a difference
opinion on this subject, as well as many
rsonal interests interesting each other,
result I trust will be that the "Cattle
surance" system will become more uni-
sal, and in much less time than would
re been the case, had not the rival
mpany started.

rejoice that this subject is beginning to
ract the agricultural public, for as the
tem of insurance is at present very im-
fect and difficult to work, it is highly
irable that the views of the practical
mer should be brought out, and I am
e they will be met and considered most
pectfully and attentively by all those
o are endeavouring to establish these
thods of placing the British farmer in a
sition to "*help himself,*" a doctrine (as
plied to him *in particular,*) in great
ute at the present day, and one that
no time or under any circumstances
ght to be despised.—*C. R. Brady, Castle*
rm, Mile end, Stockport, August 28, 1845.

P.S. Since writing the foregoing, I have
eived instructions from the "Farmers'
d Graziers' Mutual Cattle Insurance As-
iation," that they have increased the allowance in cases of the death of animals insured, to *three-fourths* of their value, and the allowance of one-fourth for the skin and carcase, instead of three-fourths as heretofore; and that they are now prepared to insure horses at sixpence in the pound.—*C. R B.*

[We feel obliged to our correspondent for his explanation of the mode adopted, by the association he represents, in taking the value of cattle for insurance. The method proposed by Mr Palin for the purpose seems to us, however, the more simple of the two.—Ed. F. H.]

DARESBURY FARMERS' CLUB.

The fourth annual meeting of the above Club came off at the Ring-o'-Bells, Daresbury, on Friday, the 26th ult. The early part of the day was rainy and unfavorable for the event. The stock in point of numbers were limited, but the quality much improved; of horses rather an excellent show; the pigs were good, but few in number; some superior implements were exhibited by Mr. Harkes, of Knutsford; and a full display of seeds and roots from Messrs Dicksons, of Chester. A cheese, weighing 196lbs from Mr. Gerrard, of Halton, excited much attention. About 130 farmers in the district sat down to a substantial dinner at three o'clock; Sir R. Brooke, Bart., in the chair—the president, Gilbert Greenall, Esq., being unavoidably absent, which was generally regretted. The usual toasts were given, and the awards of the judges read over by Mr White, the respected secretary. The committee recommended a vote of thanks to Mr. Chadwick, of Daresbury, and Mr. Watt, for several prizes given by them; also, to Messrs. Dicksons, for the exhibition of their seeds and roots, soliciting these gentlemen to continue their support. Upon the whole the affair passed off well, and at a timely hour the party separated.

ROTATION OF CROPS IN SCOTLAND.

(Continued.)

In my last I pointed out to you that the characteristics of a philosophical course of rotation of crops, are, placing plants requiring the same substances for their development, as far from each other in the course as possible; and the affording facilities for the disintegration of the soil, and for destroying and preventing the growth of weeds. I shall now draw your attention to the principal rotations practised in the Lothians, and examine them by the standard above laid down; but before doing so, it will be necessary to inquire, what are the substances of which the different crops are composed?

At the risk of repeating what may already have appeared in your journal, I transcribe the results of some of Sprengel's analytical researches into the constitution of vegetable bodies, and I also add a table prepared by myself, showing the quantities of inorganic substances per Scots acre, carried off, by a good crop, such as is usually raised in my own district, (a fertile one.)

Table showing the quantity of inorganic substances contained in 1000lbs. of each of the different productions named, with the exception of the turnips and potatoes, which show the quantities in 10,000lbs.

	WHEAT.		BARLEY.		OATS.		BEANS.		VETCH.		RYE GRASS.	RED CLOVER.	WHITE CLOVER.	TURNIPS		POTATOES.	
	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.				Roots.	Leaves.	Roots.	Leaves.
Potash	2.25	0.20	2.78	1.80	1.50	8.70	4.15	16.56	8 97	18.10	8.81	19 95	31.05	23.86	32.3	40.28	81.9
Soda	2.40	0.29	2.90	0.48	0.32	0.02	8.16	0.50	6.22	0.52	3.94	5.29	5.79	10.48	22.2	23.34	0.9
Lime	0 96	2.40	1.06	5.54	0.86	1.52	1.65	6.24	1.60	19.55	7.34	27.80	23.48	7.02	62.0	3.31	129.7
Magnesia	0.90	0.32	1.80	0.76	0.67	0 22	1.58	2.09	1.42	3.24	0.90	3.33	3.05	2.54	5.9	3 24	17.0
Alumina..........	0.26	0.90	0.25	1.46	0.14	0.06	0.34	0.10	0.22	0.15	0.31	0.14	1.90	5.36	0.3	0.50	0.4
Oxide of Iron	trace	.....	trace	0.14	0.40	0.02	.....	0.07	0 09	0.09	.....	.....	0.63	0.32	1.7	0.32	0.2
„ of Manganese	.....	.....	.....	0.20	.....	0.02	.....	0.05	0.05	0.08	.....	.....	.....	.....	.....	.....	.....
Silica	4.00	28.70	11.82	38.56	19.76	45.88	1.26	2.20	2.00	4.42	27.72	3.61	14 73	3.88	0.84	0.84	49.4
Sulphuric acid	0.50	0.37	0.59	1.18	0.35	0.79	0.89	0.34	0.50	1.22	3.53	4.47	3.58	8.01	5.40	5.40	4.2
Phosphoric acid ..	0.40	1.70	2 10	1.60	0.70	0.12	2.92	2.26	1.40	2.80	0.25	6.57	5.05	3.67	4.01	4.01	19.7
Chlorine..........	0.10	0.30	0.19	0.70	0.10	0.05	0.80	0.80	0.43	0.84	0.06	3.62	2.11	2.39	1.60	1.60	5.0

Table showing the quantities of inorganic substances per Scots acre, carried off by the following crops in pounds.

	Potatoes	Wheat.	Turnips.	Barley.	Hay.	Oats.	Beans.
Potash	121.23	6.32	199.35	13.74	85.11	43.65	69.38
Soda	52.81	7.01	95.36	10.14	28.98	4.05	22.15
Lime	56.05	3.80	114.64	19.80	98.86	9.42	25.96
Magnesia ..	13.19	3.37	23.68	7.68	11.92	3.00	11.26
Alumina....	1.27	3.80	2.82	5.13	1.59	0.69	1.20
Oxide of Iron	0.79		3.94	0.42		1.29	0.24
Do. Mangan.				0.60		0 09	0.17
Silica	20.40	110.45	39.96	157.14	119.90	265.74	10.85
Sulphur. acid	13.71	2.54	81.27	5.31	25.29	4.60	3.41
Phosph. acid.	16.40	6.95	35.49	11.10	17.42	2.64	15.21
Chlorine	5.46	1.30	25.43	2.67	9.29	0.52	3.82

I shall first then notice a rotation which prevailed over a geat extent of country, but which for reasons I shall afterwards explain, is now much restricted. I refer to what is called the four course shift; it consists of, 1st year, naked fallow, beans, or (near large towns) potatoes, to all of which a liberal supply of manure is given; 2nd year, wheat; 3rd year, grass for hay or pasture; 4th year, oats. In a pastoral district, or one where a light soil prevails, this course is modified thus: 1st, turnips manured; 2nd, wheat or barley; 3rd, grass for hay or pasture; 4th, grass, pastured; 5th, oats. By referring to the 2nd table you will find that this rotation may be called a correct one, as you will observe that the beans, potatoes, and turnips, take large quantities of substances which the wheat and barley use sparingly, but upon which the succeeding hay crop makes large demand, this again followed by oats, requiring a limited supply. It has been found, however, that in this course, it is often difficult to secure a plant of clover, (a matter of the first importance,) owing to the land becoming what is technically termed "cloversick," a circumstance which, notwithstanding the strong light of science now shed upon agriculture, is still unexplained; this has given rise to a more extended rotation, in which grass recurs after longer intervals and is generally found to have the desired effect.

In the best cultivated districts of Mid-Lothian, the extended course I have just adverted to consists of, 1st year, potatoes

nured; 2nd, wheat; 3rd, turnips ma-
'ed; 4th, barley or oats; 5th, hay; 6th,
s. In East Lothian, where, owing to
distance from any large town, potatoes
little cultivated, this course consists of
t year, naked fallow manured, 2nd,
eat, 3rd grass, 4th oats, 5th beans ma-
'ed, 6th wheat; on light descriptions of
d the fallow is sometimes displaced by
nips.

n the fertile district around Dunbar, the
l of which consists of a rich loam, a pe-
iar rotation prevails, which has been
med the "Dunbar system." It consists
1st year, turnips manured, and con-
ned by sheep on the ground; 2d, wheat;
, grass (pasture;) 4th, wheat or oats;
beans manured; 6th, wheat. The most
narkable feature in this course, is the
sing of wheat every second year, the
ps of which are most luxuriant. On
erring to the table, it will be found, and
fact is a very curious one, that wheat
tains a smaller quantity of inorganic
stances per acre than any other of the
linary plants of agriculture; we must not,
vever, forget that it is rich in nitrogen,
l we find that it requires a great supply
zotised manures, and accordingly that
treatment of the land in this district is
the most liberal character. On examina-
n of the three last mentioned courses,
i will observe that they possess all the
racteristics of a judicious rotation in a
y high degree; with the exception of the
, they introduce a large number of plants
o the course, thus preventing their repe-
on, except at long intervals; they also
rd two opportunities in six years, of
pening and minutely pulverising the
, and extirpating weeds during the cul-
ation of what have been termed fallow
ps, which are always grown in rows, with
ervals varying from 26 to 30 inches, in
ich the horse and hand hoe are kept
stantly at work until the foliage of the
nts prevents their further employment.

have now laid before you a short ac-
nt of the rotations generally practiced
ur best cultivated districts; on no farm,
vever, are they adhered to without some
ht deviations, as circumstances some-
es occur rendering departure from the
ticular course generally adopted, judi-
us or indispensable, as for instance when
s seeds fail, &c.; the rotation is the
however.

concluding this paper, it is with plea-
that I advert to the interesting fact,
here we find the revelations of science illustrating and explaining the maxims of a lengthened and wide spread experience, thus showing us the value of those researches, which some have been but too much disposed to decry, and bidding us hope the noontide of that day is not far distant, the morning of which has already dawned,' when scientific knowledge, based upon carefully conducted experiment, will replace that knowledge which has only been obtained by the gropings in the dark of generations, and by a painful and dear-bought experience.

In my next I will proceed to give you a detail of the methods pursued in the cultivation of the different crops, beginning with the fallow ones.—*J. Girdwood, Featherhall, Mid-Lothian*, 1845.

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DRAINAGE COMPANIES.

These proposed Companies will supply in part what the Earl Ducie last year waited for, when he put a stop to his draining proceedings. In his evidence before the Lords' Committee of the session just concluded, his Lordship states, that he did not drain last year, waiting for a measure which would—and his Lordship's words are remarkable—"*enable a man to grasp an estate, and drain it on the lowest possible terms.*" By the aid of Drainage Companies, now in course of being established throughout the country (his Lordship being a Director of such companies), and under the powers of the Acts for Inclosure and Drainage passed last session, "a man *may* grasp an estate and drain it on the lowest possible terms," and not only so, but he may have the aid of one of the first engineers of the day in laying out his drains; nor is this all—he may raise the money necessary for his works at the lowest possible rate of interest; and what is still further, he may repay the loan of such money by instalments—an advantage which he can obtain from no other source.

I was much engaged or I should have added these remarks to my letter of last month, in answer to your correspondent *O.*

I am glad to find you agree with me as to the meaning of the term 'Improvement," as used in reference to these Companies. —*B.*

[We certainly do agree with our correspondent on this subject, but of course every Company will decide for itself as to the extent to which its funds may be applied in effecting the improvements alluded to.—Ed. F. H.]

AGRICULTURAL IMPROVEMENTS.

We think the questions put by your correspondent, O., on this subject will do good, were it for nothing else than bringing under the notice of your readers the evidence adduced before a Committee of the House of Lords, during last session, and which was moved for, and conducted by the Duke of Richmond. There could be no better evidence than that of the Earl Ducie, Mr. Pusey, and Sir C. M. Burrell, Bart.; but it did seem odd to us that in answering, your correspondent B. was not aware of, and quote the act 10 Geo. 3, c. 51, commonly called the Montgomery Act, and which is entituled "An Act to Encourage the Improvements of Lands, Tenements, and Hereditaments, in that part of Great Britain called Scotland, held under settlements of *strict Entail.*" This act was passed in 1770, now seventy-five years ago; and, if we may judge of its practical effect and benefit by the *difference* in agricultural improvement in Scotland, from England or Ireland, we may, without being liable to be called inviduous, augur very well of its utility; yet it is not the less true, that although the *principle* of this Act is excellent, and all that could be desired, its forms and conditions are so nice and complex, that it is now *unworkable*, and almost a dead letter. Hence the necessity of taking care that the Bill brought into the House by the Duke of Richmond last session, and read a *second* time, be simple and plain in its enactments, in order that he that "runs may read." It is in contemplation next session to have the Montgomery Act *amended*, and its powers enlarged; and we hope the same session will pass measures similar *in principle* for England and Ireland; for it is too true that the *Entailed* Lands of these kingdoms are *less* improved than those held in fee simple, or without restriction. We shall have occasion to return to this subject.—*Amor Patriæ.*

P.S. Agricultural improvement is soil-*amelioration*, in any way, either by draining, planting, fencing, building, or subsoil ploughing; if by all, or any of these, you increase its productiveness, either in quantity or quality, or both.

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GERMAN FARMING, &c.

We give the following letter from an American periodical. The writer is, we understand, a student of chemistry under the justly celebrated Liebig—it is particularly interesting at this moment as well to the English farmer as to the labourer, as it shows them distinctly the kind of men they have to compete with:—

Yesterday I visited, for the first time, in Germany, a—so called—*Econom.**

An *Econom*, claims to be a scientific farmer; claims to employ the best practical methods for making a given number of acres, taking all his wants and relations into consideration, produce the largest amount of money. He has capital enough to take advantage of markets, to some extent, and proceeds upon something of a wholesale system. He has, however, no tenants, all his employe sleeping either in his own residence, or in his barns. His daughters are eligible to presentation at the prince's court, and his sons to posts under government. He labors with his sons and his men, and has no stewards or other intermediate agents between himself and those with whom exchange of crops or products are made. Thus much have I concluded from an interview of a couple of hours yesterday, during which an econom conducted me through his suite of barns, folds, &c.

His residence was, earlier, the summer palace of the Prince of Brownfels, and is interesting to some American readers, from having been the birth-place of the heroine Charlotte, in the "Sorrows of Werter." It is beautifully situated at the head of a valley, closed in throughout a distance of nearly a mile, with a varied forest of evergreen, oak and maple. Like all the old houses, it is a frame work of wood, the interstices between the timbers of which are ı with unburned bricks, and plastered or ashed without. The roof is of tile, and windows present in the sash the never ng form of the cross. Immediately about elling were some hedges, but over the farm, as far as I could see, were no walls ıration, either of hedge, wood or stone. usual. The barns, sheep folds, swinery, s, ice house, wagon house, &c. surround rangle about two hundred and eighty or ıundred feet in diameter, in the centre of is a paved basin of about sixty feet by 'or the reception of manure. The barns ıf brick and wood, and roofed like the

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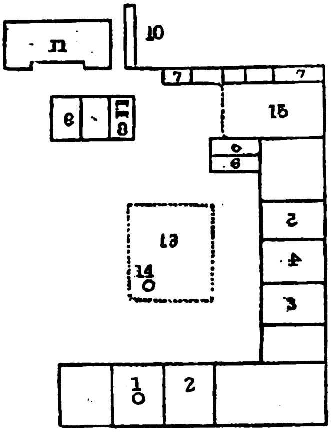
* Every man is titled in Hessia. Here are some illustrations:—Mr Prof. Dr Bischoff, Merchant Labroise, &c.

I will number in their order the seve- ırtments and objects that I saw, and the ng diagram will give their arrangement:



ı stable for cows, calves, and yearlings, ıecured by itself to a rack and manger, t intervening partitions. In the centre stall is a half hogshead for the prepara- food, which consists of chopped straw, ɔd beets, and boiled potatoes. They are n the stable throughout the entire year. alves have all the milk for the first six and are then fed with diluted milk, and ılly come to live upon the food given to ws. The cows were rather small—not spiritless, varying dun brown and tawny ɔd creatures. 2. A similar stable occu- y *about twenty-five large* fine looking cows, and a bull, that would have shown well at Poughkeepsie last autumn. The cattle were long, with great depth, and like many fine bodied animals I have seen, had generally any thing but good horns. They were too long and slender, and curved irregularly. Among them all, the dun was the prevailing tint. 3. A stable for working cattle. Of these the number was not large—about a dozen. They looked well. The same apartment lodges two workmen. 4. A stable for breeding mares and colts. Of these nothing particularly interesting was noticed. They are decidedly inferior to all horses in New-York, of any pretensions to blood. 5. A stable for work horses. This and the last are paved, in common with the yard, with round small stone. All the horses were in fine condition, clean, well shod, with their tails tied up, in what I suppose is fancied to be a pretty knot, to guard them from the mud of the roads at this season. Two workmen sleep here also. A little incident occurred here that diverted attention for a while from stalls and fodder. A "whiffet" that came to greet us at the entrance to the stable, had been entrusted, in the course of nature with a beautiful second edition of herself, and the econom, to gratify us, took the little creature from her kennel, and held it awhile to look upon. The mother was no terrier, she could not growl; she was not of St. Bernard or Newfoundland stock—she could not trust; she was a cur—she could not be indifferent; she was a gentle little whiffet, blindly devoted to her offspring. Climbing to the top of a box near, she presented her petition with such eloquence as nature gave. She bowed, and crouched, and licked the coat of her master, and when he lowered the little charge so that she could assure herself of its safety, her eyes took on an expression, of which those who have only known curs and hounds in their rough sports can believe nothing. It is, perhaps, a trifling thing to notice, but what student of nature would deny himself such a volume of entertainment. Another was in store for me. On leaving the stable, the econom whistled as for a dog. In a moment the air above was filled with doves, and the fowls came trooping from all parts of the yard. Not receiving any grain, the doves returned. I thought they must have numbered some two hundred. I whistled a second time, and all flew down again. Opening one of the doors in the range 7. 7, out bounded a large dog, resembling a hyæna more than an ordinary bull dog. He seemed to be overjoyed to see his master, but treated me as if I belonged somewhere else. He and two or three others are given the range of the yard and grounds at night. 6.6, and portions of 7.7, are swineries. I remember once seeing a picture in the *Cultivator* of what was called the "land-shark." Here are the originals. I inquired if they were not bred from the wild swine which are still in some of the preserves in this vicinity. He assured me they were not. But, in truth, they are as widely contrasted with the Berkshire, the China, and what were once denominated the "grass breed pigs" of the Genesee Valley, almost as widely as the wild boar himself. 8. One of three sheep folds. It is a room with high ceiling, having straw on the bottom, and supplied with racks. The econom purchases wethers to fatten, and does not breed them. They are pastured when the ground is bare, and accompanied always by a shepherd and dog. The flock, of about two hundred, was all of young sheep, a year and a little more. Both lambs and calves generally are dropped a little before this date. Upon inquiry whether he thought it so well, he presumed the mortality among the ewes and lambs might be greater, though there were some advantages that I did not precisely comprehend. Their wool is coarse and long, though the bodies are finely formed, and still in the possession each of a long tail. I could not see anything much above the common breed among us. 9. A carriage and waggon house. 10. A bee house. Little "cottages of straw" mounted upon other box hives of small dimensions, are the substitutes for the patent, most convenient hives, coming into use in New-York and Vermont. He says they are never annoyed by millers and worms. 11. The residence, with all its quaint antiquities, and its magazine of pipes and tobacco. 12. The distillery. Here alcohol is made from potatoes. First, the potatoes are fitted for mashing in a steam tub, then passed through a crushing apparatus into large tubs. Then comes the series of fermentations, gummy, sugar, and alcoholic. The alcohol condensed in a still yields a profit of about a dolar and a half, above the duties to the Prussian governmet. These are positively enormous, amounting to nearly sixty-three dollars a month. Naturally enough the closest surveillance is necessary in order to the collection of this revenue, and a *gens d'arme* visits the distillery at regular intervals, night and day, and requires a record of each hour's work. 13. The manure depot, so arranged as to receive the entire drainage of the stables. 14. A pump for elevating the urine to a hogshead, arranged something like our street watering carts, for the distribution of the fluid upon the fields. 15. A depot of straw. Heaped upon 13 is the litter of the stables, and all the sources of manure.

It is interesting to observe the connections which link the different parts of this econom's establishment together, and the profits which he compels all parts to yield. The cows he keeps for their manure principally, and therefore stables them. The potatoes he grows to feed his cows. Cheese, butter, milk, and alcohol are incidentals. The manure enriches the soils for the growth of wheat, rye, barley, beets, peas, and beans, as well as potatoes. A portion of these support the stock, fatten the beeves and swine, and the remainder, after deducting the expenditures for the farm and the household, goes to swell the little store laid by for advanced age, for younger sons or for luxuries. The econom attempted to explain his system of rotation, but so many of the terms employed were unintelligible to me that I have forgotten much of what he said. I think this is the plan he tries to carry out: First, potatoes; second, spring wheat; third, barley, or rye and clover; fourth, summer fallow and fall wheat; fifth, peas and lentils; then a year of repose, and then potatoes and the series again.

E. N. Horsford.

Giessen,
March 14, 1845.

LIQUID MANURE.

eport of what fell from Mr. Dickin- : the late meeting of the Yorkshire ultural Society, was not, it appears, iently correct to please that gentle- who has obligingly furnished us with llowing, as the purport of his obser- is upon what certainly has taken the rs by surprise, viz. mowing a crop of grass *nine or ten times* in one season, e aid of the urine from his horses.— give Mr. D. credit for managing and ing his liquids in *the most skilful man- ossible.*

. DICKINSON, who stated himself to be a ey, and not a practical agriculturist; a -keeper, and not a farmer, but one who ore had great need of early food for his , was desirous to describe the means by he obtained it in great abundance. His s carry off the urine by covered drains the horses into air tight tanks contiguous stables: thus he excludes the air, and s the volatized ammonia—by means of a . he draws off the liquid manure into a ithout suffering it to come in contact with r, and when he applies it to the land, he care that the apertures from the cart are ar the ground as possible, say within ches. He cut his first crop of Italian ass last year early in March, and never his land till he has cut the first crop, and rines it with one part of urine and two of *the same day ; this is important* where a growth is desired. The second crop was 13th; next May 4th; 4th crop May 24th, th, June 14th, with from two loads to ds to the acre as hay, the load being 18 while his neighbours were cutting their ith the quarters of a load to the acre; the was a very dry one, and the crops at large xceedingly light. The Italian rye grass d with this liquid either retains the mois- nger by covering the earth very quickly orbs moisture from the atmosphere. July he sixth crop was cut (with seed,) with loads of hay to the acre, the seed having pon the land considerably, he determined to harrow it in with iron harrows and leave it, not expecting much from it, he did not water it, lest the urine should destroy the vegetating property of the seed; it however produced three or four light crops afterwards, believes to be four, making in the whole 9 or 10 crops. During the present year he had cut four crops, showing a specimen from 3 to 4 feet high with which the land was perfectly covered. The chairman requested the specimen to be shown him which Mr. D. with great pleasure handed to his Lordship.—[Lord Faversham.—This is the fourth crop.—Mr. Dickinson.—It is my Lord.—Lord Faversham. You have pulled it up by the roots? Mr. D. observed he had done so to show that the grass did not root deeply in the earth, and therefore could not exhaust the land below where it existed, the roots being very small and short did not penetrate below two inches into the earth.— The specimen was then handed about and greatly admired.] Mr D. continued. He had brought also some other samples from land that had been occupied with the Italian rye grass the two previous years, which would be called exhausted land, these were samples of oats and tares, which he stood upon the chair to exhibit, saying, they were sown the 16th April; and although he is a tall man of 6 feet, they were equally or more so than himself. The next thing he wished to observe was the mode by which he thought this effect was produced. This land was a rank clay, upon a subsoil of clay, which he manured with the refuse of the London houses when pulled down, the old mortar, lime and sand—his opinion was the lime rubbish below the roots of the plant acted powerfully with the urine; the ammonia is released by the action of the lime upon which the plant luxuriates. Mr. Dickinson, whose speech excited great interest, concluded amid loud cheers.—After a few remarks from Mr. Stansfield, Mr. D. offered some further details of his farm management and success. In answer to questions he stated he had 100 horses on his farm, and that they had not eaten over 4 acres of the Italian rye grass. A cottager with three cows and one horse had used the system with great success in a slovenly manner, having got at the rate of from 6 to 7 loads per acre as hay by this treatment. The land that is required to keep one animal without the urinal dressing will, with Italian rye grasses dressed, keep an increased number in the same degree to which it is applied to a good variety of the plant.

SOUTH CHESHIRE AGRICULTURAL SOCIETY.

Why one only of the political divisions of this great county should have the advantage of an Agricultural Society, and not the other; or why, indeed, both divisions should not join in the support of *one* society, which for wealth, influence, and skill—for all, in short, for which such associations are at all times valuable—would be second to few in the kingdom, we confess we cannot clearly comprehend. Yorkshire, a manufacturing county, and one, too, in which, like Cheshire, a large number of its inhabitants are engaged in manufacturing pursuits, supports a society inferior at this moment only to the great national society itself; and many other counties, taking the same course upon this point, have important societies. Why Cheshire, therefore, should not form the area of *one* society, acting in one spirit, formed for one object, and bringing itself to bear with a degree of unity and strength corresponding with its power and population, upon every question which shall affect the agriculture of the kingdom, we, as we before observed, are at a loss to discover. This, however, we do know, that Mr. Wilbraham, and other agriculturists of eminence as landowners in the county, are of opinion, that the society should embrace the whole of Cheshire, from Birkenhead to Feather-bed-Moss. An accession of members would, in our opinion, be the least important feature in the proposed change. Its most important feature would be an increase of exhibitors, and the bringing together men and animals from the remote corners of the county into direct competition. It would have, too, this important advantage—it would afford an interchange of opinion amongst men following the same course of husbandry, (dairy husbandry), upon the several soils which the county is known to afford.

The show of the society was held this year at Sandbach—a very convenient locality, from its contiguity to the Manchester and Birmingham Railway. The cheese was exhibited in a convenient room in the Town Hall. By the rules for this competition, six cheeses were sent from the dairy of each competitor, as a sample of his dairy—and a very respectable exhibition th twenty competitors made. We particularly noticed those forwarded by Mr. Antwis, of Eddisbury; they were by much the largest in the room, and were universally admired. The first premium, however, for large cheese, was adjudged to Mr. Thomas Lee. Mr. Thomas Siddon and Mr. Joseph Platt were the two successful candidates for small cheese. The £20 prize, so liberally bestowed by the Marquis of Cholmondeley and John Tollemache, Esq. M.P. for the best cheese of not less than 30 lbs. weight each, made without Sunday labour, was adjudged to Mr. Samuel Woolley.

Mr. Jackson, of Tattenhall, was with much propriety named the judge of this department, and we have no doubt his decisions gave universal satisfaction. We should, however, have been much better pleased with the arrangements of the committee on this head, if they had agreed with the successful candidate for one of his winners, and placed it upon the dinner table, so that all might have had an opportunity of learning what was really the flavour of a prize cheese in Cheshire.

Of the stock exhibited, the bulls were good, though not numerous. Mr. Wild, of Weaverham Wood, was successful with his roan bull, three years old, and a very splendid animal he is. Mr. Palin, with his white bull, four years old, was deservedly the winner of the second prize. Mr. Woolf's bull was highly commended;

and Mr. Warburton, of Sandiway, also exhibited a very fine three years old animal of good points, and one which handled well. Of the yearling bulls, Mr. Wright's white bull was decidedly the best.

The show of dairy cows, to our surprise, was not good; a few fine animals were on the ground, but on the whole this part of the exhibition was poor. Mr. George Sigley was declared the winner—why, we cannot tell; his cow carried a famous bag it is true, but it is true also that others showed equally well for milking, and had besides more symmetry—more of those points which will enable a cow to carry flesh, if by any accident she is turned out dry. We would instance No. 3, belonging, we understood, to Mrs. Proudlove, of Ettiley Heath, which, in our opinion, should have had the second prize at least, if not the first. Mr. P. Wright, of Minshull, the owner of the second best cow of this class, should have brought the dam of his young bull if he has her. We would strongly advise to infuse into his stock a little of the Ayrshire blood; he will then be able to bring to the show beasts much shorter in the leg, and with better feeding points, whilst their feeding qualities would be if any thing improved.

The calving heifers were more promising, and indeed, we have generally found that to be the case at most of the shows this year, including that of the Royal Society at Shrewsbury; it augurs well for future excellence, and shows a progressive advance in the right direction. Mr. Wild was again successful with his light roan, and Mr. Palin ran him very close and obtained the second prize, with his dark strawberry, got by a very handsome bull brought into the county by the late Marquis of Westminster. Mr. Warburton, of Sandiway, took the premium for the best pair of stirks; Mr. Palin being the winner for the second best.

Mr. Woolf, of Haslington, and Mr. Skerratt, of Sandbach, were successful with their brawns; whilst Messrs. Wright and Norman, of Stanthorne, were the winners of the prizes for sows.

A sweepstakes of one pound each, for the best two year old heifer, was won by Sir Philip de M. Grey Egerton's white heifer, beating Mr. T. Wild and two others.—The winner we understand was bred by Mr. Palin.

Lord Combermere was the winner of a sweepstakes for boars.

The dinner of the society was held in the large room at the George Hotel;—George Wilbraham Esq. presiding. The vice-chairs were ably filled by Mr. Woolf, of Haslington, and Mr. Whitley, of Barthomley. About 120 gentlemen sitting down to an abundant supply of good things. In the course of the evening the worthy chairman was pleased to allude in very flattering terms to our labours in the great cause, and to recommend *The Herald* to the society as well worth the trifling sum charged for it. The gradual increasing patronage which the Herald continues to receive from all parts of the United Kingdom is indeed a source of the highest gratification to its originator, who without taking the usual means of making his publication known, is content to let its merits be its own harbinger, and that it should stand or fall by whatever of value it may possess in the eyes of those for whose use and benefit it is intended. We feel obliged to Mr. Wilbraham, as we do indeed to every gentleman who is so indulgent as to look with favour upon our feeble efforts; we trust our labors are of some little use—if they are and the more they are the more will they be acknowledged, and the more support we shall continue to receive. But enough of self and to proceed with the business of the day.

The CHAIRMAN, in the course of the evening, made the following practical observations:—In discussing the subject of farming, all who had done him the honour of noticing or remembering his former speeches, would give him credit for never having advocated the introduction of Norfolk, Scotch, or any other of what might be called foreign systems of farming. He was always for perfecting as far as possible the old Cheshire system—the cheese-making system; but while he would protect and improve as far as possible the old system, he did not blame those landlords who patronised other systems, and who introduced Scotch bailiffs among their farmers. Much good arose from considering the various modes of agriculture. He thought it a great advantage that gentlemen were now induced to spend their time and study upon farming, as it mixed them and their tenants up in one common interest; and it would, moreover, teach the landlords how difficult it was for their tenants in a bad year to make up the amount of their rent; and also that in a good one it was very difficult to pay a high rent. The Chairman then dwelt at some length on on the breed of cattle suitable for Cheshire, which he stated, in his opinion, not to be the fine Durham breed, but a cross with the Ayrshire, or Welsh breed, as the most likely to produce good milkers. He enforced the advantages of judicious and scientific draining; and proceeded to remark upon the necessity, in cheese-making, of attending well to its manipulation, and putting it together at a right temperature. He said that at present, while it was left to the touch of the fingers of their excellent wives to determine the proper warmth, there must be a great uncertainty in the matter. At one time their hands might be cold, at another, domestic differences might have warmed them to a fever heat; how then could they regulate the temperature for the cheese by such means? Why was not the thermometer constantly used for the purpose? Nature could not err; and thus the proper degree of heat would be uniformly secured. The Chairman here referred to an essay on the making of Cheshire cheese, by Mr. H. White, of Warrington, published in the Journal of the Royal Agricultural Society. And then proceeded to depracate the breaking up of old pastures in Cheshire, and condemned the use of a phrase very common among farmers, namely, that of "laying down land *to rest.*" Good farmers never laid their land down to rest. He advocated a proper system of rotation of crops, and the manuring of the land instead of "resting." The man who, at the end of a 14 years' lease, had his land in as good a state of vegetation as at first, and who had got the most produce out of his land in the time, was the best farmer. He trusted they would attend to cheese, the staple commodity of their county. Other lands produced wheat, barley, hops, or other commodities and they must have bread, &c. to their cheese he trusted they would never forget they had for centuries produced the finest cheese in the world. A bad system, if it were looked after, was better than the best theory in the world not looked after. The details of farming were of the greatest importance. A single tile out of place in a row of a mile long would render valueless the whole; and the loss of a single day at a critical period in havest was a very serious matter. They must depend upon their own energies, and rely entirely on their own exertions. The first want of the farmers in Cheshire was want of capital, for without that it was not likely the landlord would grant his tenant a long lease. He wished them all rich; but that would not make them so; and where they were anxious to improve their farms, he was quite sure they had good landlords, who would assist them. He was glad to observe that a spirit of agricultural improvement was progressing throughout the county. It so happened, that because the railroad lay through some ill-cultivated districts, Cheshire farming had fallen into bad repute; but he trusted that by availing themselves of the experience of practical men, and adopting those appliances which mechanism and chemistry now brought to their aid, they would redeem their name, and take their share in the general improvements of the country. He was glad to see in these days so many gentlemen turn farmers themselves; besides the great good effected by the landlord mixing among his tenants, and taking an interest in their operations and success, he was enabled by his capital to show what might be done by employing a great number of workmen. He was the best farmer who employed the greatest number of workmen; and he was very much pleased the other day at hearing a gentleman say that he employed as many men in winter as in summer; and he (the Chairman) could assure the meeting that that gentleman knew his own interests as well as any man. Employment was the greatest charity; for by that a labourer was enabled to keep himself independent of parochial relief, and to maintain his self-respect. By saving a man from idleness they also rescued him from crime; for how many were induced to commit offences from want of employment. The chief object of agricultural meetings was to gather the experience of practical farmers for the benefit of each other, and for the promotion of agricultural science, he greatly admired the practice of the Manchester and other societies, where a sort of thesis for discussion was given out some time before, in order that gentlemen might come prepared on the subject; and he had known many a wild theory put down by the plain facts of practical men thus elicited. He would here take the opportunity of recommending a very useful paper published at Chester, called the *Farmer's Herald*, and as it was only 2½d a month, he thought they could all afford to take it in. Draining required more attention than any thing in husbandry; but what a wide field was opened—whether it should be deep or shallow, or whether the expense should be borne by tenant or landlord. On this subject he should therefore say nothing, except that his friend, Mr. Corbett, of Darnhall, had lately been experimenting on the depth at which it was best to cut drains; he had just drained to the depth of a foot or a foot and a half, and of course a sort of dryness was effected, but when the drains were cut to the depth of 30 in. or 3 ft. they were found to answer perfectly. (Some gentleman observed that Mr. Corbett's draining was to the depth of 6 ft.) At all events, shallow draining had not answered, and might be said to be exploded. He would just touch upon the best manner of applying bones. There could be no doubt that for arable land it was best to have them boiled, and ground as fine as possible; but with respect to pasture he felt some doubts. He remembered about 20 years ago, when he used to hunt over land near Nantwich, there was a pasture then covered with unboiled bones, with so much of the gelatine fat left upon them, that the hounds, like the Abingdon paupers, would stop to gnaw the bones. Now if any gentlemen present was acquainted with the land of which he spoke, he should be glad to learn what its condition was at the present time, or what manures had been laid on it during the last twenty years. With respect to guano, he believed it to be the most excellent of manures, but that it required to be used with great caution. It was like arsenic or prusic acid, which when used in proper proportions and in a scientific manner were exceedingly useful medicines, but in unskilful or careless hands they were deadly poison. He had tried guano, and found it a most excellent manure in his garden, to his turnips, and in his fields; but its application to be efficacious required great caution and judgment. On a dry soil and in a dry season, he thought it would probably do more harm than good. In some cases however it was most serviceable. A tenant of his, Mr. Lees, had by its use raised one of the finest crops of turnips in the county, on land so poor, that only a few years ago two rabbits might be seen fighting upon it for three blades of grass. Stall feeding for milking purposes was another topic much agitated; trusting to the representations of Mr. Wild of Weaverham, he had formerly given opinions on this subject, which had been much ridiculed; all he knew however was from Mr. Wild, whom he must hold responsible. He (the Chairman) was aware that in Switzerland and other countries, this practice was adopted; and if by stall-feeding in winter, the cheese was as good, and 25 cows could be kept for the same money as 18, why there was a clear gain which made it worth their while to look a little further into the matter.

Mr. **Martin** was well acquainted with the field alluded to by the Chairman; it had not been dressed with any manure since the raw bones which the hounds knawed twenty-two years ago; and it retained now all that beautiful fertility and luxuriant herbage, which bones were known to produce on Cheshire pastures, so fresh and green, that it was impossible to tell whether or not it had been manured within the last four years.

Major SWETTENHAM hoped that North Cheshire would soon be united with the South Cheshire and Wirral, to form one general agricultural society for the whole county.

JOHN TOLLEMACHE, Esq., M.P., in the course of an able address, said it appeared by the returns made to Parliament there had been this year an increase in the quantity of cheese imported of 34,000 cwt. This consisted of an additional supply from America of 10,000 cwt. and from different European states of 24,000 cwt. When they considered what had been the importations in previous years, and remembered that an increase since he last met them, equal to that of the town of Manchester, had been added to the population of the country; when they considered that the prosperity of the trade had increased in a still greater ratio the consumption of articles of food, he could not see any grounds for alarm at the present importations of foreign cheese. There was another subject of great importance on which he wished to say a few words, and that was the education of the rising generation of farmers. Why should there not be a daily middle school attached to the national plan, kept distinct as far as the scholars are concerned, but under the care of the same efficient masters, who would be able to attend to them with the assistance of additional monitors. He did not see why the plan should not succeed; and at all events he meant to adopt it in his own neighbourhood. He was quite satisfied that their best protection must consist in their own exertions. It was impossible the farmer should compete, with other countries if he neglected the improvements and discoveries of the age. They possessed advantages in Cheshire even over other parts of their own country; tithes and rates were much lower, and they had the best and most increasing markets in the land at their very door. With these advantages and so long as the landlords would give leases to improving *tenants* with capital, and assistance to those who had not capital, who wished to improve their farms, he thought they would have nothing to fear for Cheshire.

MR. WHITE, the Inspector of Farms, trusted in future years there would be more competition, and that the farms would be more generally in a better state, that the Inspector might have a little more trouble in deciding which was best, than he had met with. It had been well said, that good farming would begin with good draining; but he was sorry to say, that there were few farms in that district deserving of prizes for being thoroughly well drained. There was an evident improvement in fences; and notwithstanding there was yet much land lost in wide ditches, the farmers were beginning to fill them up; and in those which still retained their old width, there was an attempt to keep them more free from weeds than formerly. He must, however, say that on many farms the weeds were the best crop the farmer had got. After several judicious remarks on the application of guano, he proceeded to show that the best system of draining for Cheshire had been proved, with few exceptions, to be down the furrow. With regard to the question of leases, he had found that the best drained farms, and the most successful farmers in the district were those who held long leases. Although there might be no doubting on the part of the tenant of the good faith of his landlord, still there was so much of fluctuation in this world, such changes from death of landlord, or death of tenant, that there could never be that confidence without a lease as with one. He lamented that an enlightened system of tenant right, like that in common use in Lincolnshire, Yorkshire, and elsewhere, was not adopted in Cheshire. It was in his opinion the only plan for elevating the Cheshire farmer to the place he ought to take in the ranks of agricultural improvement. He then proceeded to dilate at some length on sub-soil ploughing, which he explained was not turning up something bad from below to the surface—an idea he had found many farmers in Cheshire to entertain—but the loosening and lightening of it, so as to render it more pervious to the influence of sun, air, and moisture. He nsidered sub-soiling not only advantageous an accessory to proper draining, but as the eans of supplying the roots of vegetation with oisture in dry weather, by means of capillary traction from the moisture below. He conuded by a reference to the Essay he had ritten on the making of cheese, which had also een alluded to by the Chairman. Much deended on the temperature at which the milk as set; and he considered about 80 degrees he proper heat. The general practice ranged rom 68 to 88; but the one he considered too low, and the other too high. There was too much guessing—there was no uniformity of practice in this particular, or in applying the alt; it was desirable that the mode of making should be more assimilated, that there might ot be so many sorts of cheese in one county.

The CHAIRMAN concurred with Mr. White n thinking it of great importance that some ystem of tenant-right, in compensation for ermanent improvements or unexhausted maures on quitting a farm, should be adopted in is county. He also took the opportunity of pressing his hope, that if Cheshire cheese ust be coloured to please the London buyers, ey would be very particular to use nothing at the pure annatto.

Mr. WOOLF, of Haslington, admitted that the ilking qualities of cattle ought to be chiefly oked to in this county; but they were much liged to gentlemen who kept up the pure urham breed: for there could be no doubt at the short horns had much improved the eed of Cheshire. If they turned off one of ese that happened not to be a good milker, e could always be sold for £10 or £12. He new that some short horns would scarcely milk all, while others were excellent milkers; but ey could always make a good piece of beef of em. He must say that many persons made marks on Cheshire farming, in passing along e railway, who knew nothing about the matter. he Scotch farmers, who were admitted to be e best in the country, seeing rushes occaonally in the fields, were desirous of having e land ploughed and put into tillage, like the othians; but they were not acquainted with the clay lands of Cheshire, which, in his opinion, ought to be chiefly in grass, with not more than *one-fifth* or *sixth* in tillage. He did not quite agree with the Chairman as to land not wanting rest. He believed that all land might be improved by occasional rest. With respect to the four years' rotation of cropping, it was now got to a six years' course. He hoped gentlemen would not be so particular about an old turf piece being ploughed up, as all dry lands might be improved by tillage. Mr. Woolf adduced some instances of the remarkably fertilizing properties of both raw and boiled bones as manure: but declared his preference for the latter, as it was difficult to obtain raw bones of a good quality, owing to the great demand for them for manufacturing purposes.

Mr. WILD of Weaverham returned thanks for the successful candidates, and in the course of his remarks, enforced the necessity of carrying out speedily and effectively all practicable improvements. Greater produce was now required for a fast increasing population, and if we did not supply an adequate quantity of food for the people of this country, other nations must. The Cheshire stock of cattle he considered the best for its purpose in the country; he strongly recommended stall-feeding as a means of keeping two cows for one; and extolled the virtues of boiled bones, as a never-failing manure, most serviceable and permanent in its effects.

Mr. DAVIES mentioned the instance of a field which was manured with raw bones 60 years ago, and the effects of which are visible to this day.

Mr. T. BOOTH remarked that it would still be necessary to keep up the pure Durhams to get bulls. He was convinced that there were good short-horns for milking as well as bad ones. For milkers he should recommend one cross, but no more.

The SECRETARY, Mr. Beckett of Oulton Farm, read the award of premiums, which are published in our advertising columns, and the prizes were distributed to the successful competitors with suitable and encouraging comments from the Chairman.

We have given a longer space to this meeting than we feel justified in doing, having a due regard to our distant readers, but as it was an attempt on the part of the society to become practical in its discussing, we could not resist.

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ABSTRACT OF THE DRAINAGE AND INCLOSURE ACTS OF LAST SESSION.

(PREPARED EXCLUSIVELY FOR THIS PAPER.)

Inclosure Act, 8 *and* 9 *Victoria, cap.* 118, 8*th August*, 1845.

SECTION I. Appoints first commissioner of woods and forests, and two other commissioners for executing the Act.

II. Styled "Inclosure Commissioners for England and Wales," to have a common seal, and no award or order of any force unless sealed.

III. Commissioners to make annual reports to Secretary of State, and also special reports.

IV. Power to commissioners to appoint and remove assistant commissioners; appointment to be with consent of Lords of treasury.

V. All appointments under this Act limited to five years.

VI. Specifies salaries and allowances.

VII. Allowances and salaries to be paid out of the consolidated fund.

VIII. Commissioners and assistant commissioners to make a declaration as to honest and faithful execution of powers.

IX. All maps and documents of the tithe commissioners may be used; power to commissioners or assistant commissioners to summon witnesses.

X. Commissioners may delegate powers to Assistant Commissioners.

XI. Describes lands subject to be enclosed, viz:—All lands subject to any rights of common whatsoever, and whether such rights may be exercised or enjoyed at all times, or may be exercised or enjoyed only during limited times, seasons, or periods, or be subject to any suspension or restriction whatsoever in respect of the time of the enjoyment thereof: all gated and stinted pastures in which the property of the soil or of some part thereof is in the owners of the cattle gates or other gates or stints, or any of them; and also all gated and stinted pastures in which no part of the property of the soil is in the owners of the cattle gates or other gates or stints, or any of them; all land held, occupied, or used in common, either at all times or during any time or season, or periodically, and either for all purposes or for any limited purpose, and whether the separate parcels of the several owners of the soil shall or shall not be known by metes or bounds or otherwise distinguishable; all land in which the property or right of or to the vesture or herbage, or any part thereof, during the whole or any part of the year, or the property or right of or to the wood or underwood growing and to grow thereon, is separated from the property of the soil; and all lot meadows and other lands the occupation or enjoyment of the separate lots or parcels of which is subject to interchange among the respective owners in any known course of rotation or otherwise.

XII. Wastes of manors and lands subject to indefinite common rights at all times not to be inclosed without previous direction of Parliament.

XIII. New Forest and Forest of Dean excepted.

XIV. Land within certain distances of large towns not to be inclosed without the previous direction of Parliament.

XV. Village Greens not to be inclosed; but provision may be made for preserving the surface and fixing the boundaries.

[TO BE CONTINUED]

Reviews, &c.

The Veterinarian for September. London, Longman and Co.

MANY of those chronic complaints which affect the limbs of the animal as well as the human race have long since been traced to their seat in the stomach and the secretive organs—and remedies which have the effect of purifying and giving tone to those important viscera have been successfully resorted to by eminent practitioners—to their success in this respect the fame of ny of them is mainly attributable, wit- s the late Mr. Abernethy, who referred nost every local disease to derangement the stomach and impaired digestion. the following case a doctrine which ap- ars to us new, is broached, and which, king the lungs the seat of a disease in foot appears at a first view sufficiently rtling; however, Mr. Waters really ap- ars to have reasons for the conclusion which he came, as the case was what he ly calls a "singular" one, we give his count of it entire :—

ingular Case of Disease of the Lungs.— By George Waters, M.R.C.V.S.

Mr. A., of this town, turned his bay chaise- re into a large loose box with a yard attached it, belonging to a friend of his, seven miles m Cambridge, for the purpose of giving her o or three months' rest. When about half s time had expired, she was noticed by the eward to be slightly lame in the near hind ot. He examined it, and, seeing a discharge m the cleft of the frog, supposed thrush to the cause of the limping, and dressed it dur- three or four days with a mixture of tar d salt; but, by this time, the mare had be- me so dreadfully lame, that they thought it visable to acquaint Mr. A. of the circum- nce, who immediately applied to me, and ested my attendance upon her.

found the mare with the toe of the affected resting lightly on the ground, the heel llen and very painful, with an oozing of id pus from the frog. Finding that the ny frog and sole, towards the heels had se- ated from their corresponding villi, I re- ved them carefully with my drawing-knife, applied pledges of tow, soaked with a weak ingent, to the parts—enveloped the whole and pastern in a warm bran poultice—gave xative—and left her for the night.

n the following day I found the swelling increased in size at the heel, and the leg on inner side above the fetlock was considera- enlarged. The parts were ordered to be sed with lead lotion several times in the course of the day, and a fresh poultice applied to the foot.

3d day.—I found the skin at the heel had ulcerated in several places, and a dark sanious pus was oozing from it. The disease in the foot continued to progress and pus was issuing through the inner quarter at the coronet. The swelling above the fetlock continued to enlarge, and she is now beginning to refuse her food. I thinned the quarter, and removed the detached parts; applied simple dressing, and renewed the poultice.

4th day.—The abscess at the fetlock was pointing, the heel sloughing, and she discharged occasionally at the nostrils a quantity of greyish-coloured pus. I auscultated her, and detected a gurgling in the bronchial tubes. I then punctured the abscess above the fetlock with my lancet, and more than a pound of thick pus escaped.

She was kept until the sixth day from my first visit. Seeing no possibility of the mare's recovery, she was led to the stack-yard and destroyed.

Post-mortem examination.—Both right and left lungs were filled with tubercles of various sizes, some of which contained a quantity of calcareous matter, while others were in a state of suppuration. The pus varied in consistence in the different tubercles. On cutting into the bronchial tubes, they were found filled with a purulent fluid. The heart and pericardium were healthy, as were the pleuræ. There were several tubercles in the messentery; but with this exception the contents of the abdominal cavity presented a healthy appearance.

The inguinal glands on the same side as the affected foot were in a suppurating state; the sensitive frog, and the greater part of the elastic substance that forms the heel, had become quite a soft decomposed mass; and a separation of the horny from the sensitive laminæ had taken place to a great extent around the outer quarter.

Remarks.—This was an aged mare, and had been subject for several years past to a chronic dry cough; but always carried plenty of flesh, and was in good plight when she was attacked with this lameness. Until the fourth day of my visits there were no symptoms to lead me to suspect any increase of disease in the respiratory organs.

Although there can be no doubt that the tubercles had passed into the stage of suppuration before I was sent for to examine the foot, I am inclined to think that this destructive disease in the foot was connected with that of the lungs; for there are many cases on record in which tuberculization of the lungs had proceeded to the last stage without even their presence being suspected by the medical attendant, until some accidental circumstance, such as the formation of pus in different parts of the body (as in the foregoing instance) induced them to examine the subject attentively with a view of ascertaining whether they depended upon disease of any of the internal organs; for it is well known that pus may be conveyed through the system by the circulation, and deposited in certain parts, acting as nuclei for the formation of abscesses.

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Transactions of the Highland and Agricultural Society of Scotland. No. IX. Wm. Blackwood and Sons.

From the preliminary notice appended to the present No. of these Transactions, we are gratified to learn that continued success attends this important society—the increase in the number of members which has taken place during the last two years being greater than during any former period of the same extent. His Grace the Duke of Montrose has succeeded his Grace the Duke of Richmond in the presidential chair of the society. We trust his Grace the new president, has at heart the same anxiety to forward the interests of agriculture, which so strongly marks every act of the life of his noble predecessor—even if he has, we can assure him he has no light task before him would he seek to follow in the same path as that which the Duke of Richmond has trodden before him. A practical agriculturist of no mean pretensions, the late president of the society has the means in his hands of affording to every society for the promotion of agriculture, of which he becomes at any time the head, that substantial assistance which can only be rendered by one combining "Practice with Science." A mere theorist, whatever his talent, or however high his rank, cannot be expected to give the same efficient aid to the great cause of agriculture, as he who glories in the name of "a British Farmer." We hope, however, the Duke of Montrose will exhibit as sincere a desire, whilst occupying the chair of the Highland Society, to promote the interests of Agriculture and of the British Farmer as his predecessor ever does, and we are sure the society will "take the will for the deed," and feel grateful for every effort made to promote its objects and extend its sphere of usefulness.

Here too, as in the *Journal of Agriculture,* Professor Johnston is "the bright peculi star," and most brilliantly does he shine "*On the economical use of Bones as a manure and on their solution in sulphuric acid.*"

The learned Professor sets out with two propositions, which he puts as follows:—

1. The home supply of manure is not sufficient to meet the wants of the land. Can we do nothing to husband that which we possess? Can we not apply it in such a way as to mak the same quantity go further? We pay al large sums every year to foreign countries f manures; can we not make a simaller ou serve our purpose, by applying what we imp in a more economical manner?

2. Again, guano is likely either to becom scarce or to rise in price. Can we not bri some of our other well-known manures into su a form as shall enable us to use them in t same way as guano—as generally and at cheap a rate—as shall enable them by th cheapness to supersede guano altogether?

And then goes on to consider—

1. COMPOSITION OF BONES.

Bones differ slightly in composition in ent animals. They vary also with the the animal and with the part of the body

are taken. The following composi-
ones of the cow will represent very
of the bones which are usually ap-
land :—

Animal Matter (gelatine)...	33¼
e of Lime	55½
e of Magnesia	3
e of Lime	3¾
Common Salt...........	3½
of Calcium	1
	100

nes are burned in the open fire, the
ter they contain—the gelatine—
and the white *bone earth* alone re-
ese two portions of the bone, the
or organic, and the incombustible
part, are equally essential to the
ction which the bones produce. As
erienced writers have disputed this
the organic part, it will be proper
dvert to the composition and mode
this portion of the bone.

ITION AND MODE OF ACTION OF ORGANIC PART OF BONES.

ine of bones consists of

ı	50,37
gen	6,33
en..................	17,95
ı	25,35
	100.

tical in composition with horn and
ss, and is very nearly the same as
and skin. It is of importance to
at it contains about 18 per cent., or
its whole weight, of nitrogen.

organic part is *likely* to act benefi-
nanure, is rendered probable by the
rn shavings are highly valued as an
to the land, and that the parings of
oollen rags bring a high price in the
nanures for certain crops.

it *does* act beneficially is proved by
which attends its use when sepa-
the earthly part of the bones. In
, bones are boiled for the extraction
lue) which is used in the stiffening
When the stiffening liquor is so
ed as to be unfit for further use, it has been applied as a liquid manure to grass-lands with the greatest success. There can be no reasonable question then that upon theorganic part of bones their beneficial action, as a manure, in some degree depends. It is only surprising that chemists of name should have been found to deny it, and that practical men should have so far distrusted their own experience as to have believed and acted upon such an opinion.

But how does this organic matter act? It, no doubt, feeds the plant, but it may do this in one or other of two ways. It may either be completely decomposed in the soil and enter the roots of plants—as Liebig supposes all organic nourishment to enter—in the form of carbonic acid and ammonia; or it may be rendered soluble in the soil, and may thus be taken up by the roots, without undergoing any ultimate and thorough decomposition.

Now, supposing it to be resolved into carbonic acid and ammonia, the quantity of gelatine contained in 100 lbs. of dry bone is sufficient to produce upwards of 6½ lbs. of ammonia—as much as is present in 20 lbs. of sal-ammoniac, or in 30 lbs. of crystalized sulphate of ammonia. Supposing the animal matter of the bones to be thus decomposed in the soil before it can be useful to the plant, few, I think, will question that the quantity of ammonia it is likely to produce would materially aid the growth of the crops to which the bones are applied.

But I do not think this final decomposition necessary. The large quantity of nitrogen which the gelatine contains, may, I believe, be taken up by the plant without being previously brought into the state of ammonia. The gelatine, being rendered soluble in the soil, may enter the roots, and may at once minister to the growth of the plant, just as the gluten of the seed, being rendered soluble when the grain germinates, ascends with the sap, and feeds the young plant. It would be out of place here to discuss this point, or to give the reasons which induce me to entertain this opinion. It is sufficient for the practical man to know that whichever of these views a man may hold, he must still grant that the gelatine of the bone is valuable to the farmer. Whether its nitrogen enters into the root in the form of ammonia, or in some more compound state, it must be useful to the plant: and he who advises the farmer to burn his bones, or would persuade him that the earthly part alone, or *anything equivalent to this earthy part* would alone be as useful to his land as the entire bone, advises to his hurt, and would persuade him to that which would eventually be a source of loss.

3. MODE OF ACTION OF THE INORGANIC PART OF BONES.

The composition of the incombustible part of bone, the bone earth, has been given above. It consists chiefly of phosphate of lime, with about 3 per cent. each of phosphate of magnesia, carbonate of lime, and salts of soda.

All these substances, of which its bones consist, the ox must have derived from its vegetable food. They must, therefore, exist in all nutritive plants. But these plants can obtain them only from the soil. They must, therefore, be present in all fertile soils. And if a soil is poor in these substances, or is wholly void of them, that soil must be improved by the addition of these things. In other words, they must be invaluable as manures to such a soil: and hence the worth of bones, and other manures which contain these substances, to the practical farmer.

Sprengel long ago reasoned thus; and he asserted that the indications of theory were proved by experience—that burned bones actually fertilized the land.

Liebig followed him; but more boldly pronounced that the whole value of bones, as a manure, depended upon, and was derived from, the earthy phosphates they contained.

In the Appendix to my published *Lectures on Agricultural Chemistry and Geology*, and in my *Suggestions for Experiments in Practical Agriculture* published separately, I suggested, with the view of settling this question to the satisfaction of all, that comparative experiments should be made with burned and unburned bones upon the same soils and crops, and with quantities of each which should contain equal weights of the earthy ingredients.

Numerous experiments were, in conse
made in various parts of the island,
them, however, exactly fulfilling *all* th
tions which were necessary to secure a
comparative results. Some of them
corded in the Transactions of the Highl
Agricultural Society, others have be
lished in the different agricultural perio
the day. I do not quote any of them,
are not all concordant, but the genera
were these:—

a Bones, under *favourable conditions*,
fail, when applied alone, in ra
average crop of turnips.

b Burnt bones, laid on alone, and in
tity equivalent to that of an ordi
nuring with bones, do not alway
in raising an average crop of turn

c In some rare instances, again, a
some soils, burnt bones actually
larger crop of turnips than an e
weight of unburned bones.

Burned bones, therefore, as theory
are useful to the land; but the emplo
unburned bones is the safer and the su
greater security must arise from th
matter they contain, therefore this
matter cannot be without its use. T
also, an artificial mixture, which con
thing equivalent to this organic ma
never be made to perform all the fu
bones. If the soil already contains a s
of organic matter—or if this be ad
form of farm-yard or other similar
then burned bones, or artificial mixtu
a similar composition, will be sufficie
duce the usual effects of bones. But
matter be deficient, the entire bones w
be the farmer's surest reliance.

The general adoption of this soun
at present opposed by the notion wh
have been led to adopt, that if plants
obtain saline matter from the soil,
draw organic food enough from the
ammonia of the atmosphere, it is said,
nitrogen enough to the plant, and th
case of bones, their organic matter i
since the air will readily yield to the

suppose this organic matter to impart to the . But I believe the minds of our thinking will soon be disabused upon this point, that, in a few years, this opinion will have d its long resting-place among the other gular fancies which, year by year, afford eneral occupation to the novelty-loving g our gentlemen farmers.

ANALOGY IN COMPOSITION BETWEEN BONES AND GUANO.

here is a striking analogy in composition een bones and guano, which is, for other ons, interesting to the practical man, but is cial important in connexion with the object he present paper.

e following table exhibits the composition ones compared with the average composi- of good Ichaboe guano, supposing both in ry state. Bones, as they are applied to the contain about 18 per cent. of water, Icha- uano from 20 25 per cent:—

	Bones.	Guano.*
nic Animal Matter	33	56
phates of Lime and Magnesia	59	26
onate of Lime	4	6
of Soda	4	10
of Potash	trace	trace
ous Matter		2
	100	100

we compare these two columns, we see bones and guano contain essentially the things. There is an organic part in both; contain a large per centage of phosphates; there are salts of soda and a trace of potash th. But they differ in the proportions in h these several constituents are present.

The organic matter is in larger proportion e guano. It is to be observed, however, this organic matter is in the guano in a decomposed state. It consists of salts, ates, carbonates, &c.,) of ammonia mixed dark-coloured matter, (humic acid,) and of crystallization. In the Ichaboe guano, the ammonia rarely exceeds six or eight per cent. of the whole weight. But this proportion of ammonia we have seen that the gelatine of the bones will produce, when it undergoes complete decomposition. On the whole, therefore, I am inclined to think that the organic matter in a cwt. of bones is nearly of equal value to vegetation with that in a cwt. of Ichaboe guano. Those who are doubtful upon this point may easily supply any supposed deficiency in the former, by the addition of a few pounds of sulphate of ammonia.

b The proportion of the phosphates in bones is twice as great as in the Ichaboe guano. In this respect, therefore, bones are decidedly the more valuable.

c The soda salts are generally in somewhat larger quantity in guano. They consist chiefly of common salt, mixed, in the case of guano, with a variable proportion of sulphate of soda. If any stress be laid upon this difference, it is easy to remove it, by adding to the bones a few pounds of sulphate of soda, which can be bought at a very moderate cost.

From this comparison between bones and Ichaboe guano we are entitled to infer—

(1.) That what can be said of the value and permanent effect of the one manure may almost with equal truth be said of the other.

(2.) That we can fully supply the place of the one by the use of the other; and, what is more important to our present purpose.

(3.) *That, weight for weight, bones ought to go farther than Ichaboe guano in fertilizing the land.*

We hope to recur again to this very important subject, as our space will not let us follow the learned Professor further at present.

◆

Transactions and Annual Report of the Royal Agricultural Improvement Society of Ireland. Dublin, W. Curry, jun.

We are favored with the volume of transactions of this important society for the year 1844. The Transactions contain reports of thorough draining on the estates of Lord Blayney, the Earl of Caledon, Lord

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his composition of Ichaboe guano is the approxi- average of several hundred samples examined in boratory. The Saldanha Bay guano contains twice as much of the phosphates of lime and ia, and a proportionately less quantity of organic .

Templeton, James L. W. Napier, the Marquis of Waterford, and Sir Richard O'Donnell, for the gold medal offered by the latter "To the proprietor in Ireland who should up to the 1st March, 1845, have executed the greatest quantity of thorough draining not less than 100 acres, statute measure &c." And the reports of the following competitors for the society's gold medal, "to the proprietor or tenant in Ireland who should, during the years 1843 and 1844, have thorough-drained, on Mr. Smith of Deanston's principles, and in the most approved manner, the greatest quantity of land in his own occupation, not less than one hundred acres, English statute measure," viz., Mr. Peter Cowan, land-steward to the Earl of Erne—Mr. Andrew Templeton, land-steward to the Lord Dufferin and Clanboye—Messrs. Andrews of Comber, County Down—and Dr. O'Neill, Fermoy.

The whole of these reports shew that a decided spirit of improvement has taken firm hold of both the landlords and the tenantry of Ireland—that the Deanston, or frequent drain system is well understood, and that its extension over the whole country is but a work of time;—that this time may be very materially abridged, by the adoption of the principle of mutual assistance, by means of joint stock capital, we have no doubt; and we would very respectfully suggest to the council of the improvement society, whether it would not be a great aid to agriculture in Ireland, if a company were formed under the sanction of the council for effecting the drainage and inclosure of waste lands. Money would not be wanting in the necessary amount, provided means were taken to establish the company upon a proper basis. The transactions also contain some very judicious plans and estimates for the erection of cottages and farm houses, and offices for small holdings. To improve the habits of the people, in regard to the cleanliness and comfort of their dwellings, it appears to us imperative, in the first place, to shew them what comfort in that respect means, and how far it is conferred by the dwellings themselves, from which they may infer, and will, in fact, very soon learn to do so, what is necessary on their parts to insure it. It is a pity that this volume is not made periodical; there are abundant materials in Ireland for at least two numbers in the year; and we make no doubt writers in plenty, on both sides of the Channel, will be found to render them useful readable books, if by the aid of the council they were published at a moderate price, would be the means of conferring important and lasting benefits upon the people.

GOOD FARMING.

At the annual meeting and show of the Lonsdale Agricultural Society, Mr. Saunders said, he had lately visited a farm belonging to the Earl of Derby, at Heywood, and rented by a tenant-farmer named Neilson, under lease. All the known aids that mechanism and chemistry could supply had been brought to bear on that farm. The crops were magnificient, and the cattle among the finest that he had ever seen. He expended £200 a-year in labour, and he (the speaker) had made a calculation of his gross profits for four years on 30 acres, and found that after deducting £200 for manure they amounted to £2000. Mr. N. had some advantages which the farmers in this district could not have, because he was in the neighbourhood of large towns where manure was at hand. There was one point notwithstanding, that should not be forgotten. His farm was within the scope of his capital, and he (Mr. S.) wished to impress upon the farmers that although, by adopting this plan, they would have less acreage, both their comforts and profits would be increased; and until they got rid of the grasping system of occupying more land than they could manage, they would give ust cause of complaint.

THE POTATO CROP ON THE CONTINENT.

Accounts from Stenay, on the Meuse, state that the disease with which the potato crops have been attacked in French Flanders and Belgium has extended to that country. The tubercles, the stalks of which are speckled, proved to be completely soft and full of water, and are unfit for food. The *Gazette* of Metz also announces that the contagion has affected several communes round Sarraguemines, in which the damage is greater in the strong wet lands. Here the potatoes are so deleterious that they cannot be given even to cattle. This scourge has fallen upon the districts of Sarrelouis and Leybach, insomuch that petitions have been presented to the Prussian government for a suspension of all distillation from potatoes.

RVEST IN THE NORTH.—The *Echo*
nnounces that in Pomerenia, Meck-
Silesia, Holstein, and Denmark, the
f the crops had been favoured by
r, and that the wheat was abundant
xcellent quality.

SPONDENTS.—*We endeavour, as far*
ace will permit, 'to keep square,' as
s say, with our correspondents. Our
are, however, due to several for an
ble postponement of their favors till
th.

The Markets.

o reason from the reports we continue
of the proceedings of the harvest to
of our prognostic of last month—per-
eld in WHEAT *may turn out a shade*
we then anticipated, but it will be
e. This, with the firmness reported
in the Foreign Grain Markets, Ame-
ll as European, lead us to the conclu-
retrocession of prices will take place
ets for some time to come, probably
fter the autumn sowing is finished.
farmers over supply the markets or
accounts of the anticipated scarcity in
nd Belgium not be realized to the
feared a fall in prices must be sub-

ng sown Grain in BARLEY *and* OATS
d light in many districts.

AN *crops are generally well reported*
f which, however, will be ready for
some time to come.

e quoted higher.

plentiful in the markets and a reduc-
aken place in prices, particularly for
easts, which bring down the average
retty much what it was this time last
ime MUTTON *maintains its place, and*
s high as 5s. per 8lbs. for best.

is variously reported upon; prime
ears a fair price in the London Mar-
ugh the quotations as published do
76*s.*

The WOOL *market is steadily good. Cheviot and crossed are quoted in Liverpool at* 13*s.* 6*d.* *to* 17*s.* 9*d. per* 24*lbs.*

		s.	*d.*		*s.*	*d.*
Laid Highland Wool, per 24lbs		9	6	to	10	0
White Highland do		12	9		13	6
Laid Crossed	do..unwashed	11	0		12	6
Ditto	do...washed	12	0		13	9
Ditto Cheviot	do..unwashed	11	6		13	6
Ditto	do..washed	14	6		18	0
White ditto	do	24	0		26	0

The HOP *duty is still called* £180,000.

LONDON, Sep. 29.		Per	Qr.
WHEAT, Essex and Kent, new, red	58	60	63
White		60	70
RYE, new		30	32
BARLEY, Grinding		25	28
Malting		30	33
Chevalier		34	35
Irish		26	28
Bere		25	—
MALT, Suffolk and Norfolk		58	63
Brown		48	52
Kingston and Ware		60	—
Chevalier		65	—
OATS, Yorksh. & Lincolnsh., feed		24	25
Potatoe		24	27
Youghall and Cork black		20	22
Cork, white		23	24
Dublin		22	23
Black		22	23
Scotch feed		24	26
Potatoe		28	30
Limerick		24	27
BEANS, Tick, new		40	44
Old, small		46	47
PEAS, Grey		46	—
Maple		46	—
White		48	50
Boilers		50	54

SEED, Rape, 27*l.* 29*l.* Irish, 22*l.* 26*l.* per last.
Mustard, White......12 18
Brown ....10 15 per bush.
FLOUR, Town-made 40 45
Suffolk.... 32 35 per sk. of 280 lbs.
Stockton and Norfolk 42 44

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		50	52
Hamburgh		44	46
Rostock		46	47
BARLEY		23	—
OATS, Brew		16	17
Feed		17	18
BEANS	—	34	40

Peas	44	46
Flour, American, per barrel	24	25
Baltic	24	25

LONDON AVERAGES.

Wheat	6545	qrs. £2	17	6
Barley	519	1	12	2
Oats	4021	1	4	7
Beans	433	1	19	5
Peas	1092	2	3	10
Rye	198	1	16	1

SEED MARKET.

	s.		s.
Canary, per qr.	50	to	52
Carraway, per cwt.	42	to	44
Clover, red, English	45	to	50
„ „ Foreign	40	to	48
„ white, English	60	to	62
„ „ Foreign	50	to	62
Coriander	12	to	18
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000	£11	to	£11 5s.
„ „ Foreign, p. ton	£7 7s.	to	£7 10
Mustard, white, per bushel	10	to	14
„ superfine „	12	to	18
„ brown „	10	to	15
Rapeseed, English, per last	£25	to	—
Tares, English, spring p. bushel.	4s 0d	to	6
Foreign „ „ „	3s	to	5

LIVERPOOL, Sept. 27.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℔ 70lbs.	9	3	9	10
Ditto, red	8	8	9	0
Irish white, new	7	9	8	4
Egyptian	7	3	7	6
Oats, Eng. mealing, ℔ 45lbs.	3	6	4	0
Irish	3	3	3	4
Welsh	3	2	3	4
Barley, Eng. malting ℔ imp. qr.	30	0	34	0
Grinding	0	0	0	0
Irish and Scotch	4	0	4	9
Rye, per imp. qr.	32	0	34	0
Beans, English, per imp. qr.	46	0	50	0
Irish and Scotch	42	0	44	0
Foreign	42	0	46	0
Egyptian, per 480lbs.	0	0	0	0
Peas, English, per imp. qr.	46	0	52	0
Foreign	44	0	48	0
Canadian	0	0	0	0
Malt, per imp. qr., fine	62	0	64	0
Flour, English, per 280lbs.	46	0	50	0
Irish	44	0	48	0
Foreign, duty-paid, per 190lbs., U.S.	0	0	0	0
Canadian	32	0	34	0
Oatmeal, English, Scotch, and Welsh, per 240lbs.	27	0	29	0
Irish	20	0	31	0
Indian Corn, per 480lbs.	33	0	35	0

PRICE OF AGRICULTURAL PRODUCE

Liverpool, Sept 27.

Hay, best p.st.	1s	3	*Potatoes.*	s.	d.
Clover ditto	0	9½	Short tops	1	7
Green ditto	0	2½	Red apple	0	0
Vetches	0	0	Cups	1	8
Straw.			Cattle	1	5
Wheat	0	6½	Turnips pr ton	20	0
Oat	0	5½	Carrots	0	0
Barley	0	7	Manure	7	0

Cattle Markets.

LONDON, SMITHFIELD.

Sep. 29, 1845.	℔ st. of 8 ℔s.				
	s.	d.		s.	d.
Inferior coarse beasts	2	4	to	2	8
Second quality do.	2	10	to	3	2
Prime large Oxen	3	4	to	3	6
Prime Scots, &c.	3	8	to	4	0
Coarse and inferior Sheep	3	0	to	3	4
Second quality do.	3	6	to	4	0
Prime coarse woolled do	4	2	to	4	6
Prime Southdown do	4	8	to	5	0
Large coarse calves	3	10	to	4	6
Prime small do	4	8	to	4	10
Large Hogs	3	0	to	4	0
Neat small Porkers	4	2	to	5	2

LIVERPOOL, Sept 22.

	s.	d.	s.	d.
Beef, per ℔.	0	6	0	6½
Mutton	0	6½	0	7
Lamb	0	6½	0	7

MANURES.

Subjoined are the prices of several sorts of of manure:—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. per cwt.
Guano, 10s. to 12s. per cwt., according to quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. per ton landed and housed, 38s. to 42s. per ton,
Nitrate of Soda, 16s. 0d. (duty pd.) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per packet, sufficient foı three acres.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 6s. per cwt.
Compost, £3. 12s. 6d. per hhd. sufficient for three acres.
Alkalies, 28s. and 42s. per cwt.
Sulphuric Acid, 1½d. per ℔.
Sulphur for Destroying Worm on Turnips, 12s. per cwt.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

NOVEMBER—1845.

AGRICULTURAL EDUCATION.

evil of no common magnitude, and one ich has hitherto retarded the advance- nt of agriculture in England, is the nt of schools, if not of practical agri- ture, at least of that character which ll afford to the sons of the farmer an cation suitable to their pursuits and ans. By the sons of the farmer we must understood to mean not the children of opulent agricultural capitalist who has thousands embarked in an extensive cupation of some hundreds of acres, but practical working man, whose means e estimated by hundreds, and whose lding of limited extent, is better stocked th fine children than prime short horns. is the honest hard working yeoman who present enlists our sympathies, and on hose behalf we require the establishment parochial schools in some respects simi- r to those which have so long in Scotland en the means of providing us with well cated, scientific, practical farmers and rdeners. We do not seek to educate h men at an expensive college, but we n at something between the Cirencester tablishment and that at Templemoyle.— f-supporting, in some respects, we would ve them at the same time endowed by e benevolence of patriotic landowners, that whilst the youths are some portion every day practically proving the theories they are taught in agriculture, they may, during other parts of the day, be imbibing from able and well-paid tutors that knowledge which may fit them for the pursuits of either agriculture or commerce.—We would endow such schools with exhibitions to our universities, so that when a more than ordinary display of talent is found, it may be fostered to the utmost, in order that the highest walks of literature may be placed within the reach of well directed energy, and that the country may obtain the advantages to arise from the services of individuals so trained.

There is an evident disposition on the part of many of our large landowners to meet this question fairly—nay, liberally—and seeing that this is so, our attention has been called to the subject. What is now to be done (and it is impartially called for, if we would keep moving in the right direction), should be *well* done. We must not be content to follow Scotland upon this subject, but we must take the lead of her: our position as a nation requires us to shew the world that England, turning her attention to any matter of grave importance, carries out her intentions in respect to it in a manner not to be surpassed. *Nulli secundus* should be our motto in this as in every thing else.

Lord Morpeth met the question with his usual ability at the late meeting of the

Yorkshire Agricultural Society, at Beverley, and well observed that the wealthy, as well as the poor, had their educational wants amply supplied, whilst the smaller class of farmers in this country were left almost entirely without the means of instruction for their children.

Mr. Tollemache, one of the very deservedly popular members for South Cheshire, at the last meeting of the Agricultural Society for that division of the county, introduced the subject in the course of his address to the meeting, in the following terms:—

> There was another subject of great importance on which he wished to say a few words, and that was the education of the rising generation of farmers. Why should there not be a daily middle school attached to the national plan, kept distinct, as far as the scholars are concerned, but under the care of the same efficient masters, who would be able to attend to them with the assistance of additional monitors? He did not see why the plan should not succeed; and at all events he meant to adopt it in his own neighbourhood.

Henry Wilson, Esq. the High Sheriff of Suffolk, brought the question of education before his hearers, observing—

> He was of opinion that agriculturists as a class had not equal opportunities with others, of properly educating their sons according to the advancement of the times. He did not wish that the sons of farmers should be made masters of the classics—he did not desire that the sons of agriculture should sow dragons' teeth, so that soldiers might spring from them, or that they should think, by extracting the cube of any given number, they might have an extended knowledge of agricultural implements. He desired only that a farmer's son should have the means afforded him of obtaining a good, sound, and practical education. It was not the mere accident of birth which made men, but education. It ought to be the object of all, that whatever profession they followed, an attempt should be made for improvement—that an effort should be made to create better sailors, better soldiers, better philosophers, and to instil into all the fullest sense of the responsibility of mankind, and of their high position as moral creatures. He only wished the members of the association to talk over the subject amongst themselves, for surely it could but be of the greatest advantage to procure such an education as he had understood could be obtained at Cirencester and in Hertfordshire, and at an equally moderate expense. If the opinions of the farmers of the county were in unison on the subject, the thing was done. Public opinion was then obtained in its favour—public opinion, which only spoke with a whisper at first, but at length rose into a voice which reached every ear—a voice which Government ought at all times to respect.

We might quote the authority, if that indeed were necessary, of many other eminent individuals, to prove that a great necessity exists for putting in practice some well-considered plan for removing the evil of which all must be aware, and of which so many, with so much truth, complain. As a commencement of the good work, we would suggest, that in each of the five districts into which England and Wales has been divided by the Council of the Royal Agricultural Society, one or more schools should be established upon the proprietary plan, so much approved of in our great towns; that such schools should be in part self supported by the hand labour of the scholars; and that whilst the course of instruction, dietary and other regulations are more liberal than at Templemoyle, the cost to the pupils should be so arranged as to fall below that fixed at Cirencester.

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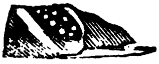
DISEASED POTATOES.

At dinner yesterday I came in contact with the enclosed. Can you give me any account of it?—*A Lover of Potatoes.*—Sep 22, 1845.



[The enclosed were two pieces of potato, one of which is represented above, which we transmitted to Mr. Curtis, in the hope he might be able to afford some satisfactory account of the phenomenon, we have the pleasure to append the reply he was kind enough to favour us with.—*Ed. F. H.*]

I have carefully examined the little bag in the potato and its contents, and have little bt that the pellucid globules are the gs of a slug. I have found numbers of tatoes this autumn perforated, and have ery reason to believe, by slugs, having tected several in the cavities, and some their operations of forming the cells: one instance the slug had eaten only lf way into the potato, and was so bloated d so much larger than the aperture, that was with difficulty it could be extricated.

The potatoes being diseased and very sceptible of decay this season, they be- me the proper food for many annulose imals; but these must not be mistaken the *cause* of the misfortune, they are tirely the *consequence* of the murrain ich has blighted the potato crops this r.—*John Curtis, Hayes, near Uxbridge,* 22, 1845.

◆

SERVATIONS ON LABOUR AND BOURERS IN THE WEST INDIES.

> e are both six feet men, and when at plough could upright. I had always a difficulty in keeping my- warm on a cold day, when I was ploughing my te acre of strong land, and three inches deeper than of my neighbours."

e above is from your paper of July. Reading n this island, Barbadoes, the best cultivated ny of the West India islands, and perhaps he most industrious of any of the free negroes, ressed me in a very different manner from t the perusal of the same would have done ome, and led me into a train of thought as rds the differences of labour and labourers cool climate and in a tropical climate. With hope, that some of the reflections which the trast gave rise to may prove useful, I am ced to communicate them. Should you k them worthy of a place in your journal, may at least tend to make some of your ne-readers more contented with their country, ter acquainted with the peculiar advantages ich they derive from circumstances of wea- r and seasons, too often considered the con- ry.

First, I would observe what a picture does passage present to the mind,—and a very delightful one let me add in this hot region,—the six feet man, hardly able to keep himself warm, when ploughing his statute acre a day, and doing his work better than his neighbours, owing to the goodness of his instrument, and the same man able to write and reason so well.

How is this contrasted with what one sees here. There is a single man at work in a field close by, preparing the ground for Indian corn,—a spare, small negroe, about five feet high, a bad example indeed of the race,—using a small hoe, the common, I may say almost universal implement of agriculture in these islands. He commences labour at six o'clock, has an hour's rest from ten to eleven, when he takes some food; renews his labour at eleven and finishes at four. His day's work will be a very small portion of an acre; at most the piece of ground laboured will not exceed twelve feet square, for which he will receive a quarter of a dollar, equivalent to 1s. ½d.

On the brow of an adjoining hill, I see a party, a gang of men and women employed in field-labour,—some twenty or thirty, with a black superintendent looking on; most of the men hoeing in slow time,—some of the women similarly occupied, but most of them employed in bringing manure in shallow baskets on their heads. What a contrast this with our English labourer; and how vastly superior his condition!

To what, let us next consider is his manifest superiority owing? Is it not to race, climate, machinery, intelligence, education, mainly owing? The race of man, as is well known, is intimately connected with climate. The animal man, in Great Britain, may perhaps be considered almost the perfection of the animal for work; strong, active, and enduring. The cool climate that owns him, is favourable to exertion, in which a man must work well to keep himself warm;—in which he must work well to make himself comfortable;—and be frugal and economical, as well as industrious, if he has a family, to support them and make them comfortable.

Connected with difference of climate how many more are his wants than those of a native of the tropics, as regards fuel, light, clothing,

—roof as well as walls; but the floor the bare ground,—the first cost of it may be about twenty dollars, or a little more than four pounds, —which he can hire, at about a shilling a week, with a bit of ground, where commonly is to be seen tethered some animal; a pig, a goat, a sheep, or a cow, which is fed it is hardly known how,—not to mention poultry, which scarcely a negro family is without, picking up a subsistence at large. No doubt, owing to the high temperature, less food is required in this climate than in a colder one, and a diet chiefly vegetable suffices. The North American hunter can consume eight pounds of meat a day, (such is the allowance of the men employed by the Hudsons' Bay Company); the Irishman, living chiefly on potatoes, consumes daily about the same quantity. Here a working man is satisfied with a half-a-pound of the meal of Indian corn twice a-day, made with water into a kind of pudding, the polenta of the south of Europe, seasoned with a bit of salt fish, the cost of both of which will be about 2d., with occasional change, as a variety, to sweet potatoes, pumpkins, yams, and plantains, and other vegetables, which may happen to abound, and

You will be curious to know how
worked. The manner was characte
soil did not appear to be a stiff on
oxen were employed in drawing
and two men in driving them;—thr
cluding the ploughman, and eight ar
the work, (in slower time, and I ha
in a more imperfect manner,) of a p
and a single man, as ploughman, i
The harrow was drawn by the same
oxen, having their two drivers. I
remark incidentally, that nothing st
more, on one's arrival in this countr
apparent mass of animals employed
It is common to see six, eight, an
drawing a waggon, and two or three
a waggon of moderate size;—or in p
oxen four, six, or eight mules. It
haps be said that climate has a lik
man and beast; and that here neithe
or ox, or man has the vigour of mu
he possesses in a northern climate, n
ble of the like exertion. There ma
truth in this. But habit, probably
is more to blame than mere want of
and another circumstance to blame

that is peculiar here, and seem-
nay be the effect of the former
ition of the African race, which
e great majority of the labourers.
wances and ample, ought to be
effect of that degrading condition,
rs, on the morals, and on the habits
. In all these respects it is be-
ey are improving, as much so as
cted in so short a period, in a state
—the whole of the present gene-
working class of field labourers
laves. But, whilst making ample
the evil effects of slavery, we
eful not to over-rate its effects, and
t what may be owing to other
ose of a permanent kind, connec-
ate and peculiarities of climate.
m disposed to think will be the
any high advance of civilization
the people in these islands, of
they may be. The white man
the West Indies;—the character
ace, the free island-born Barba-
les himself in his blood, the de-
English settlers, is notoriously
morals, in intelligence, and in all
. I do not speak of the landed
ost of whom have been educated
nd have had their characters form-

rities of climate alluded to, seem
exceedingly unfavorable to im-
-rather having a contrary influ-
Italy, where so much has been
man has so nobly distinguished
" dolce far niente," it is pleasant
how much pleasanter must it be
n from labour, where the range of
re is not as there between about
for the working hours throughout
between 80° and 88°. "Neces-
ther of invention." How feeble
us here, where a man can clothe
few shillings, buy food enough for
e, for twopence a-day, and provide
a dwelling at the cost of about five

Barbadoes, Sep. 9th, **1845.**

STALL-FEEDING CATTLE.

(*Continued from page* 275.)

I SHALL resume the subject of stall-feeding cattle. A Mr. Laurance, a great writer on agriculture, in advocating this system, and in combating the argument that pasturing does not impoverish land, and that mowing does, asks this question,—"Whether there be some *charm* in the *mouth* of a cow?" Now, if Mr. Laurance had been a practical man, he would have known that the *charm* lay *elsewhere*. He would also have known that it is not *mowing* a field which makes it *poorer*, but carting the produce *off the field after it is mown*. If the manure made from that produce be spread upon the field again, then the field is in the same state of fertility as before it was mown, or as it would have been if it had been pastured. It is quite clear that the extra quantity of manure made by soiling is required by the land—of course no profit arises from that.

In pasturing feeding stock, they are driven to the field and remain there till fat. They feed themselves and leave their manure and urine on the land. In this there is little expense. In stall-feeding, the food has to be cut and carted from the field to the yard, and the dung carted back and spread upon the field. This, including the attendance of the cattle in feeding and cleaning them, in paying attention to the manure and urine, and in loading the dung, &c. is a considerable expence, which has to be paid for from the profit of keeping more stock from the same land.

In a *milking stock* the difference of expense is not so great between pasturing and soiling, as in a feeding stock; because, in pasturing a milk stock, they have to be driven *to* and *from* the field to the farm-yard twice every day; or the milkers will have to go to the field twice every day and carry their milk home to the dairy. In either case, the expence of labour will be about half the cost of carting the food to the cattle.

In a *feeding stock pasturing*, there is no wear and tear of *roads* in *driving stock* twice a day to or from the field. In a *milk stock* there is, except they are milked in the field; and there is always great inconvenience in this.

In stall-feeding stock there is great wear and tear of *roads* in *carting* the food from the field and the manure back to it, particularly if the weather be wet; and in Lancashire and Cheshire we have too much of this sort of weather.

In *pasturing* strong loams, stiff clays, and peaty soils, in *wet weather*, great damage is done to the grass by *treading*; but there is also great damage done to such land in such weather by *carting* the produce in a green state from it. In stall-feeding the food should be brought fresh cut to the cattle twice every day; therefore the horse and cart will have to go twice upon the field every day, and to the place where the food is cut. It will not do to carry it to the gate. It will never do for a stall-feeder except he makes up his mind to raise good crops. Labour, seed, &c. would eat up the value of a light crop. I will suppose a good crop of clover to be carted home green to cattle; the weight would be ten or twelve tons upon a statute acre; this would make twenty or twenty-four journies, perhaps, upon every acre, with a horse and cart; (if the stock soiled were few, the number of journies would be greater.) It will thus be clearly seen that on the above description of land *in wet weather*, the damage *by carting* will be great. Almost every writer on soiling, overlooks this; and yet they can write on the damage done by pasturing such land in wet weather. We are not yet got to that perfection in the arts as to be able to remove our crops from our fields in balloons. In a few years we perhaps shall be. "Agriculture is only yet in its *infancy*." It was so when I was a boy 50 years ago.

One advantage of stall-feeding is, that the cattle never get into *mischief*, if there be proper convenience at home in the yards and stalls; and without these conveniences, the system will not answer. Another advantage is, there requires *few fences upon a farm;* of course the expence of keeping them in repair is done away with, and the land they take up applied to better purposes, and the land, for a couple of yards on each side the removed fences, made of more value. But will the landowners allow of the fences and hedge-row timber to be grubbed up? *Game preserving* and *stall-feediug* will never do together. When the land is continually under the plough—as it must be under a proper system of stall feeding, except now and then when in clover—it will never do to have *small fields* and *crooked fences.*

If a farm be very large, it necessarily follows that some parts of the land will be a considerable distance from the farm yard, and will of course increase the expence of carting food and manure. A small farm will have the advantage over a large one in this respect.

Under a complete system of stall-feeding, the horse and manual labour is very great; and to carry it out to the best advantage, the farm house and outbuildings should be convenient and extensive. They should be situated in the centre of the farm, whether it be a large or small one, and good roads from the yard to every field or part of the farm. Whatever part falls short of this, adds to the expence of carrying on the system, and not for one year, but every year.

Where the soil is very thin, and the subsoil very bad—or where the surface of the land is very hilly, stall-feeding, as a general system, never can or will pay the expence.

Two very great advantages of stall-feeding are, finding more labour for the working classes, and raising more food for man from the same extent of land. These are two very important considerations. Every farmer, before he commences the system, must consider his circumstances, the soil he has to work upon, the state it is in, the climate he has to contend with, the prejudice of his landlord as to ploughing up old grass, and the number of game to be kept. I have no doubt whatever but as the population increases, stall-feeding will and must be extended. But, before it be extended very much to the advantage of farmers, there must be a reformation in landowners' opinions on many points, a reformation in the habits of farmers, and in their general intelligence, and a complete reformation in farms and farm buildings.

Stall-feeding requires the constant attention of the master. An attentive, humane, good tempered servant, who has the care of cattle, in any case, is invaluable, but most particularly so in stall-feeding, as they are always then under his care. Great loss may arise from giving too much food at once, or from neglect in giving it them at the proper time. An hasty tempered man should never have cattle under his care.

You will see, Mr. Editor, that weighing the advantages and disadvantages of the system, is a very difficult task, if one wishes to come to a correct balance; I shall therefore, conclude with giving my general opinion, and leave every farmer to calculate he odds for himself.

On small farms of from two to twenty-
ve or thirty statute acres, I have no doubt
its advantages, if the land is not moun-
in or moor, and is dry, or can be made
. Upon a middle-sized farm, if the land
good and dry, lies convenient to the
rm buildings, is not too hilly, and the
ock kept a *milking* one, I should decidedly
y the advantages were in favour of stall-
eding. If the soil was a stiff clay, or very
illy, or the farm very large, or lay very
nconvenient, I should not recommend stall
eeding cattle at all, and particularly if a
eeding stock. In every case I should re-
commend work-horses to be fed in the stall.

To conclude, I would recommend no farmer, whether his farm be great or small, to adopt stall-feeeing, except he be industrious and persevering, and has a full determination and the power to do full justice to the land and the stock.—*W. Rothwell, Winwick, Oct.* 24, 1845.

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FAILURE OF THE POTATO CROP.

Permit me, through your columns, to offer a few observations relative to the failure of the potato crop, which may in truth be considered a national calamity; they not only afford to the poor in many districts (to a vast extent) a substitute for bread, but they are also used for the same purpose at the tables of the wealthy, who prefer a mealy potato: consequently such a loss by this valuable root must produce an increase in the price of that corn which produces the staff of life. Under such considerations, I am desirous to impress upon all potato planters, including the cottage gardener, the important consideration of using every effort to secure seed for the next season to plant their ground, trusting that it will be blessed with increase, without which it will be in vain to plant or water. There is no doubt that plants will bear a high price.

It is almost universal that the small tubers are the soundest—such should be selected and carefully laid thin in open sheds, or the dry ground, to have the advantage of the air, which will soon turn them green, by which process they will harden, and their germinative properties will be preserved, making them much stronger plants. It will be advisable to cover them up at night to secure them from frost, before putting them in hills or banks, until the appearance of a severe frost setting in; to accomplish which, I have sheds made with sloated hurdles, which answers remarkably well; placing two hurdles four feet six inches distant on the outside, set two hurdles about nine inches, filling between with straw to keep out a slight frost, putting on two old hurdles with the feet slacked lime sifted over them; and in putting them in hills or banks, being careful and not put too many together, having the banks very narrow, shaking dry straw with the potatoes as they are laid down, in order to prevent them over heating, allowing the heat to evaporate more readily, which so often injures the potatoes; in addition, place about the centre of the hill a row of pipe tiles, as a main conductor, securing the ends if severe weather. In ordinary seasons potatoes should be kept from heating if possible. I have no doubt this season, if they are not laid up in a dry state, decomposition will take place in a very short time: the potatoes should be turned over carefully, having all the infected ones picked out—they will be readily seen, as the sound ones will turn green.

Under all the painful circumstances, it is gratifying to know that the sound part of the damaged potatoes is not unwholesome, and that they have been carefully examined and analyzed by Mr. Harepath and Dr. Pagget, who have kindly published their opinion, shewing that they may be used as

the present day connected with
some of the readers have difficu
derstanding what they read,
some of the chemical articles th
For instance, when the analysi
come before them, the terms si
mina, red oxide of iron, magnesi
sulphuric acid, phosphoric acid, m
carbonate of lime, gypsum, &c. n
appearance almost constantly.
the farmer wants to know the ea
stituents of the grain of wheat, tl
ing terms will start up in certai
tions, namely—potass, soda, lime
sia, peroxide of iron, phosphoric
phuric acid, silica, and fluorine;
the terms of the proximate pri
organic chemistry happen to be in
such as albumen, fibrine, gelatine,
are at a loss to know the meanin
words, and a few come to the res
purchasing works on chemistry,
that they may become acquain
and understand the terms of th
and have some acquaintance wit
ces so closely connected with the

We are informed by those who have studied the elementary bodies, that they can be formed into classes, according to their analogies: take, for example, the classification of Berzelius—he arranges them under four classes, namely, gazolytes, halogeus, metalloids, and metals. Now, if a person was able to master the first class, namely, gaszolites, which contain only three elementary bodies—oxygen, hydrogen, and nitrogen, and may be compared to the first three letters of the alphabet, he would soon be able to advance a step farther in the science. For instance, having become acquainted with the abstract properties of oxygen and hydrogen, he proceeds to the compound which they form, and which is water. The composition of water may be demonstrated by synthesis and analysis, words synonymous with composition and decomposition; then he proceeds to the third element, nitrogen, and its combinations with those previously described: thus nitrogen and oxygen form five distinct compounds, namely, protoxide and binoxide of nitrogen, and hyponitrous, nitrous and nitric acids. Again, nitrogen with hydrogen form ammonia. We are informed by chemists, that this substance performs a very important part in supplying vegetation with nitrogen; and as nitrogen exists in every part of the vegetable structure, it must be essential to the nourishment of plants. We are also informed that it is not so much the quantity of ammonia that is important to plants, as the form in which it is presented to them. When in a volatile state it is, in a great measure, lost before it can be imbibed: when fixed in the state of salts, its volatility is overcome, and not the smallest portion of the ammonia is lost to the plants, for it is all dissolved by the water and imbibed by the roots. It is the interest of the farmer and gardener to secure as much as possible of this valuable substance, and how to prevent it from flying to the clouds of heaven, ought to be some of their first lessons; and although the dunghill may not be the most pleasant place in the world to work in, yet it may be made much better than it commonly is, if people were taught how to sweeten it.

It may appear trifling to some to write about the management of a dunghill; but others, whose minds are somewhat enlightened by the knowledge of chemistry, know that the subject is of more importance than many cultivators of the soil imagine it to be. A living writer says, "The fermentation of farm-yard manure is in fact a subject of far greater importance than is generally imagined, for on a due estimation of its value mainly depends the individual success, as well as the national prosperity of our agriculture." We are informed that in some places the annual value of the urine of a cow, is estimated at £2. Now, in some places, much of the urine is allowed to waste; but suppose only one-half is lost, only imagine what a loss the farmer and the country sustains. One pound sterling on a cow, may appear to some a small amount; but when we recollect that the assumed number of cattle amounts to seven or eight millions in this country, it will be seen at a glance, that the loss is no trifle. It is a common custom with some farmers to allow the farm-yard manure to ferment till the fibrous texture of the vegetable matter is entirely broken down, and till the manure becomes cold, and can be easily cut with a spade. Chemists bring forth many arguments and facts which shew that such a mode of treating farm-yard dung is injurious to the interests of the farmer.—When violent fermentation is going on, a large quantity of fluid and gaseous matters are lost, so much so that the dung is reduced one half or two-thirds in weight. Much carbonic acid and ammonia are set free, whereas if these had been retained, they would have become useful for the nourishment of plants. We are informed that Sir H. Davy filled a large retort capable of containing three pints of water, with some hot fermenting manure, consisting principally of the litter and dung of cattle; he adopted a small receiver to the retort, and connected the whole with mercurial pneumatic apparatus, so as to collect the condensible and elastic fluid which might arise from the dung. The receiver soon became lined with dew, and drops began, in a few hours, to trickle down the sides of it. Elastic fluid was generated likewise. In three days thirty-five cubical inches had been formed, which, when analyzed, were found to contain twenty-one cubical inches of carbonic acid, and the remainder was hydro-carbonate mixed with some azote. The fluid matter collected in the receiver at the same time, amounted to nearly half an ounce; it had a saline taste, and a disagreeable smell, and contained some acetate and carbonate of ammonia. This substance, as has already been stated, is a compound of nitrogen and hydrogen; it was originally obtained in the form of muriate of ammonia, by burning the dung of camels, which was collected for the purpose in Egypt, especially about the temple of Jupiter Ammon—whence the term sal ammoniac.

We are informed by Boussingault and Payen, that manures, properly so called, are of organic origin: they supply the deficiency of that gaseous or soluble food which plants are able to assimilate. It is those putrescent substances which abound in nitrogen, and which undergo the most rapid decay, that ought to be constantly consumed by the crops. This is now a fact that admits of no question. From these statements we learn that much valuable matter is lost to the cultivator of the soil, when farm-yard manure is allowed to undergo violent fermentation.

We have tried various experiments in order to ascertain the proper degree of heat which a dunghill ought to be allowed to attain, and we have come to the conclusion that it ought never to exceed 80 degrees of *Fahrenheit's* thermometer. The thing may be easily tested by any one that has a thermometer in his possession: he will find when the heat rises to 90 or 120 degrees, the dung soon becomes dry and mouldy, and so light that it may be blown about by the wind like dry ashes. Let the farmer test such dung against that which has been kept at a low moist heat, and he will perhaps find that his crops will give their verdict against the overheated manure.

There is another simple way by which a person may know when the decomposition of the dunghill is going on too rapidly. When a piece of paper moistened in spirit of salt, held over the steam arising from a dunghill gives dense fumes, it is a certain test, that ammonia is disengaged. Various plans are tried to prevent destructive fermentation. Some water it; this may cool it for a short time, but when we recollect that moisture is one of the principal agents in forwarding decomposition, it will be found that water only hastens the decay of the dung. Frequent turning of the dunghill should be resorted to when the heat is too great, and what was formerly the outside of the heap should be turned into the body of it, so that all the woody fibre of the heap should be in a disposition to decay. We have found peat an excellent ingredient to mix with fermenting dung. This substance can be had in many parts of the country; but farmers entertain different opinions regarding it. No doubt the time was when peat did more harm than good upon certain soils; when it was put upon cold wet ground, it had a tendency to make them colder, but the present improved system of agriculture is banishing such soils from the country and from the nomenclature of the husbandman; and it will be found that peat when properly applied, will yet be turned to some advantage by those whose land is properly drained. By mixing it with fresh farm-yard dung, it imbibes much of its goodness and prevents a considerable quantity of the gaseous matter from escaping, and when carried to the field retains food for vegetation, and in dry seasons serves as a store-house for the plant. We have seen the fibres of plants clustering round a piece of impregnated peat in dry weather as if it had been their sheet anchor.

Now if farmers and gardeners were just able to master the three elementary bodies of the first class they would soon be able to add another to the list, and thus step by step they would walk on the chemical highway, gaining useful knowledge in their journey, and would soon be able to understand not only simple combinations, but those that are more complicated.—*Peter Mackenzie, West Plean.*

THE MUMMY WHEAT.

COPY LETTER FROM DR. ARMSTRONG TO THE EARL OF HADDINGTON.

In 1838, Mr. Pettigrew, the well-known lecturer on Egyptian antiquities, gave me, out of two small glasses in his private museum, six grains of wheat and as many of barley, furnishing me at the same time with the following information as regards their history. Sir Gordon Wilkinson, during his recent travels in the Thebaid, opened an ancient tomb, (which had probably remained unvisited by man during the greater part of 3000 years) and, from some alabaster sepulchral vases therein, took with his own hand a quantity of wheat and barley, which had been preserved there. Portions of this grain Sir G. Wilkinson gave to several of his friends, and among them to Mr. Pettigrew, who, as I have already stated, made me a sharer in the venerable harvest. Until the spring of 1840, the 12 corns of which I became possessed remained among certain bronzes and images, in their separate paper box; but about this time, finding myself in the country, and much occupied in horticultural pursuits, I thought of these ancient seeds, and resolved to try my fortune in raising them.

Now, the question being merely a question of identity, and more or less involving personal character, I shall be pardoned if I endeavour to satisfy the unbelieving mind by descending to a few humble *details of my care* and caution. I ordered four garden pots of well sifted mould; and not contented with my gardener's care in sifting, I emptied each pot into a newspaper, and put the earth back, morsel by morsel, with my own fingers. It was next to impossible that any other seed should have been there. I then, on the 7th of March, planted my grains, three in a pot, in the angles of a triangle, so as to be sure of the spots where the sprouts would probably come up, by way of additional security against any chance seed being in the soil. Of the twelve, only one germinated—the plant in question—the blade first becoming visible on the 22d of April (46th day.) The remaining eleven, after long patience, I picked out again, and found, in every instance, they were rotting in the earth, being eaten away by a number of minute white worms, the produce, probably, of eggs deposited in the days of the Pharaohs. The seeds I sent to your Lordship were taken from an ear obtained direct from Mr. Tupper in 1842, and was the first ear of the second harvest raised from the original mummy wheat, and were consequently the grandchildren.—*20th December*, 1843.

STATEMENT BY MR. BUIST, TYNINGHAME.

Four grains of the above were planted by Mr. Ford, in Tyninghame garden, on the first day of November, 1842. It was reaped on the 2nd day of September, 1843.

No. 1	had 31	stalks, and	3	destroyed	by mice.
— 2	57	do.	10	do.	do.
— 3	52	do.	14	do.	do.
— 4	49	do.	17	do	do.

In all....189 sound, and 44 destroyed.

The straw was fully six feet in height, and the ears would average six inches in length, and and many of them contained from 50 to 60 grains in one ear. A quantity of these are given away, and only one remains entire at Tyninghame.

On the 18th of March, 1844, 3437 grains were planted on the farm at Tyninghame, and reaped on the 10th of September of the same year. The straw was strong and stood well up; and wheat in other respects retained the character of the former year. It was computed that one-third was destroyed by game; but the produce was half a bushel of dressed wheat, and a quarter of a bushel of light. The grains were large and rather coarse.

There is planted this year nearly one English acre and a quarter of an acre (1¼ acres.) It is rather thin on the ground, but stands well up. Much of it has been eaten by hares; but seven or eight bolls, of four bushels, are expected as the produce. It was planted on the 24th February, 1845, and is not reaped.

Four ears of this year's growth are sent.—The straw is four feet three inches in length, and is exactly the same height as the pearl wheat, which is growing alongside of it.

Tyninghame, 18*th Sep.* 1845.

TEMPLEMOYLE AGRICULTURAL SCHOOL.

We give the following very interesting, though short account of the annual examination of the pupils in this school, for the purpose of shewing the very satisfactory results of a system, which, we have no doubt we shall ere long have the pleasure to announce, has been adopted in every district of England and Wales. That Ireland has taken the only sure first step towards the improvement of her agriculture in the establishment of these schools, must be apparent to every one, who for a moment reflects upon the impossibility of changing the habits of a people, without commencing with the more ductile portion of it, viz., its youth. All know and feel the power of early impressions and associations—all will therefore see at a glance that in proportion as these impressions are turned towards a good and worthy object, will that object be attainable :—

At the annual examination of the pupils of the Templemoyle Agricultural Seminary, there was a large attendance of farmers and others, who examined the flower-garden and the different parts of the farm, while a considerable number were congregated in the school-rooms, where the examination of the classes in geography and mathematics was in progress, conducted by the Rev. Mr. Laughlin, of Foyle College, and Messrs. Simpson and Leathem. A singing class also gave pleasing proof of their proficiency in the Hullah system. The answering in the several branches of a literary and scientific education was highly creditable both to the masters and pupils.

The agricultural examination was conducted by James Anderson, Esq, and it embraced every topic of interest to the agriculturist. Among other subjects treated of were these, viz., the nature and composition of soil, draining, subsoil ploughing, rotation of crops, manures, the composition of vegetable substances, gasses, minerals, fermentation, the different kinds of wheat, varieties of rye and barley, the best soils for these grains, potatoe culture, &c. The result was most satisfactory. Of the whole class examined, almost all showed that they possessed an intimate acquaintance with practical and theoretical agriculture, and that they were perfectly conversant with the mechanical details, as well as the scientific principles necessary in order to become intelligent and judicious farmers.

After Mr. Anderson had concluded, Professor Johnston, who was requested to do so, asked the pupils a number of questions respecting the nature of the soils in the district, the modes of culture which they would recommend as most suitable for each; the defects of the present system as practised in the neighbourhood; on liquid manures, fencing, cottages and farm-houses, feeding cattle, reaping, ploughing, the rotation of crops. The object of this examination was to ascertain whether the pupils had a thorough knowledge of the various subjects alluded to, and were in the habit of observing the state of matters around them. The replies and remarks made by the boys evinced extraordinary intelligence, and proved that they were acute observers of the circumstances of the locality. The manner in which the learned Professor framed his questions was admirably adapted to the capacity of the scholars, as he left it to the boys themselves to state what the qualities of the surrounding soils were, and then elicited from them individually their opinions as to the way in which they should be cultivated.

Professor Johnston presented a copy of his invaluable lectures on agricultural chemistry, to William Heron of Woodstock Newton-mountkennedy, for his superior answering in the previous examination, and for the remarkable intelligence and promptitude he had displayed.

AGRICULTURAL IMPROVERS—

THEIR PRESENT POSITION.

It is a gratifying fact that there exists a stirring desire for amending our wretchedly defective system of agriculture—drainage is well known to be the basis of that amendment—and consequently, drainage is either being or about to be executed extensively.

ance is sometimes a very expensive My not knowing the best mode of ge caused me to expend uselessly, ining my Tiptree Hall Farm, £800 than there was any occasion for. It possible that prejudice may be some- as costly as ignorance; but mine was ejudice, but ignorance of facts, re- g, however, in heavy loss. I con- it, therefore, no more than my duty mmunicate to my brother agricultu- he mode of draining I ought to have ed (and am now pursuing), and also ler the difficulties that beset our those difficulties are the cost of inch- pipes, and the expense of cutting the and depositing them therein. Many o doubt be startled when I tell them ipes of 1-inch bore can be made at a f 6s. per 1000; and are in Kent safely ited and covered in at a depth of four elow the surface, at a cost of 4d. per f 5½ yards; that no earth is previ- removed by the plough, but entirely e spade; and that expert workmen at rice, in pure clays, earn good wages; here there are stones, &c. requiring ickaxe, a higher rate is paid. Now, eve I am correct in stating, that ag- ural improvers, generally, are quite ant of these facts. In many districts pipes are not to be got; and where are any, the makers ask 18s. to 20s. 000 for them, and make them twice avy and bulky as there is any occasion thereby causing greater expense in ng and in cutting the drains. The rea- or so few small pipes being made, is lisbelief by most farmers, that they e efficaciously employed in drainage. point being no longer a doubtful one, ng been settled and approved by Mr. es and Mr. Pusey, as the result of own and many other farmers' practice large scale (see *Royal Agricultural So- s Journal,)* I will proceed to further mation. Land drainers, and labourers being unused to this deep drainage, and not knowing the best way to proceed, take care to ask an exhorbitant price, from 6d. to 10d. per rod. Mr. Parkes's mode of proceeding may be thus described:—A pipe-making machine, with various dies and fixing, about £35. Erecting a kiln and sheds, capable of drying and burning from 700,000 to 1,000,000 of inch pipes annually —from £150 to £200—depending on locality, and whether timber is furnished by the estate. Labourers required to produce the above quantity:—two men, a youth, and three boys. The work being so arranged that they find constant employment by digging, wheeling the clay, &c. Clay being given by the estate, Mr. Parkes finds that at 6s. per 1000, the pipes pay all charges of labour and fuel, and leave 20 per cent for wear and tear of the kilns, sheds, and machines, which is beyond the absolute requirement on that account; 6s. per 1000 includes coals for fuel, at 25s. per ton. Each pipe is of 1-inch bore, 12 inches long, and weighs about 1lb. The number required to drain an acre varies with the soil from 500 to 1,320. Now as to cutting —no preparatory plough is allowed. The workmen stretch two parallel lines on the surface of the earth, and dig a trench gradually narrowing to the width of the sole of a boot. Standing in this narrow trench, with one foot before the other, a longer and narrower spade, of an elliptic form, is now used, and which, by forming two cuts thus (), removes the last split 1½ inch wide at bottom. The scoop smoothes the bottom and sides. The pipes being laid diagonally on the surface ready for the drainer, he, without handling them, whips a croom or hooked stick into one end of the pipe, and places it firmly against the preceding pipe in the bottom of the drain. The outlet pipe is made a yard long, and well rammed with wet clay to keep it in its place. I have recently paid 6d. per rod of 5½ yards for 4 feet drainage, no ploughing out, in soil requiring the use of pickaxe; and am now paying 5d. per rod in very strong brick earth, 4 feet deep—that is, for cutting the drains, placing the pipes, and filling in the earth. At this rate the men earn 12s. per week. Of course where boulder stones or other obstructions occur, a higher price will be required. For 5-feet drainage I am paying 6d. per rod; although I am convinced the price may be reduced, when I get proper sized pipes. I am at present paying 12s. per 1000 for 1-inch bore pipes 12 inches long. The maker persists in making them 50 per cent heavier and bulkier than there is any occasion for, causing more expense in cartage and in cutting the drains. They ought not to cost more than 8s. per 1000. Although the removal of earth by the workmen may appear cheap to those unused to deep drainage, it will be readily perceived to be fair wages: for instance, the ordinary price for digging a square rod of ground is £6, 10 inches deep. In the drain one-half so much is removed, the stiffness and depth compensating for the quantity. It is the absurd custom of using large pipes and cutting broad trenches that has hitherto made drainage such an expensive affair. In silty, boggy, or treacherous soils, Mr. Parkes's plan for giving security and continuity to the pipes is simple and admirable. The small pipes meet in a pipe large enough to receive them, and 6 inches long, so as to form a collar over them, and prevent their removing laterally, vertically, or downward, and the silt is thus prevented working into the joints. On very strong soils inch-pipe drains laid at 33 feet apart, which is about the maximum distance of 4 feet deep, should not exceed 300 yards in length; if the field be longer, somewhat larger pipes should be added. Much wider distances between the drains may be used on looser soils—say from 50 to 60 feet.—*I. J. Mechi, 4, Leadenhall-street, London.*

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THISTLES will be ultimately destroyed by unremitting perseverance in pulling them; it may require two or three years to accomplish it.

THE PRESENT CONDITION OF THE POTATOE CROP, &c.

A MEETING was held on the 18th ult., at Paisley, for the purpose of taking into consideration the present condition of the potato crop, and for conferring as to the adoption of means for rendering the farina of the potatoes available for food and other purposes; and also for preserving the roots for seed against the attacks of the prevalent murrain. Provost Murray presided.

Mr CUNNINGHAM of Craigends, called the attention of the meeting to the application of lime in a pulverised state, as being an effectual means of preserving the crop.—He had seen a letter from the Duke of Buckingham's factor, stating that he had made an experiment by making two drills and placing potatoes in each; the right drill he covered with earth, and the left he sprinkled over with lime slightly slaked. Those which got the lime, on being examined a month afterwards, he found nothing wrong with at all, and the others, which had not got the lime, were diseased.

Mr. Penfold said the absorption of the moisture from the potato by the lime was the cause of their preservation—which was a proof in favour of their being kept dry. He thought that landlords and gentlemen and farmers should at once go to London and order new seed potatoes, as by their present mode of cultivation they had exhausted their plant and made it weak. He wanted them to go back to the original plant for seed, which might be had. He had himself sold to the amount of 1,500 tons of them in the course of 12 months—these were potatoes which could not be well eaten; but it was necessary to have them to renew the plant. They must have for seed what were in England called waxy potatoes.

Mr. Glen, of Hawkhead Mills, said he had grown a considerable quantity of potatoes. He had been sceptical as to the disease till the last few days. He was fully persuaded from their appearance, that it did not look like a wet moist rot. He had looked his pits on Saturday last, and again on Monday, and it was with difficulty he found any that were seriously damaged; they were to be seen slightly moulded; and spots were also seen on others, and where there was no appearance of this mouldiness, the diseased potatoes could not be discovered without cutting them with a knife. He was perfectly persuaded that there were a great many which would be saved, and lid not at all despair of seed. He might wrong, but that was his opinion.

rchibald Gardner, Esq. of Nethercom- 1, said that he had been engaged for last three or four days in separating sound potatoes from the unsound ones. found that by examining the eyes he ld detect the disease, and two persons e able to separate a large quantity in a r. He had procured a large quantity of al seeds, and was laying the potatoes layers, and scattering the seeds over m; and he thought that by preserving m in this way they might be saved. It s also very necessary that every eye uld be examined by cutting it with a ife, and it was necessary that they should kept very dry. He was also of opinion it by cutting off the diseased part, they ght be kept for two or three months, and believed the sound part to be perfectly olesome. On looking at the specimen, duced, said he could very easily detect disease by a slight incision. He forgot mention that the healthy eye shows clear l bright, and the diseased eye was very n and dark.

The Provost asked if any gentleman pre- nt had had mills going, or had been mak- g experiments on the subject.

Mr. Young thought it should be first cided whether the farina from diseased tatoes was fit for food for man or beast.

Mr. Stirrat said he had prepared flour, iich he found to be good. Dr. Paton d examined and analysed a quantity iich he had made from diseased potatoes, d he was of opinion that it was perfectly od and wholesome.

Mr. Fleming said that he might state at it was the opinion of Professor Whe- ell that the farina was perfectly sound.

Mr. Penfold stated that it was not the rina, but the fibre of the potato that was seased.

Mr. Fyfe thought that the farmers need t be very much alarmed, as a very large nount of farina was used in manufactures both in England and Scotland, and he was not sure that any farina that could be produced was poisonous.

Mr. Stirrat said, that the expense of the engineering department of a mill for making the potatoes into flour, which would produce about 100 bolls per day, would be from £60 to £70. Mr. Smith, agricultural machine maker, he stated to be his informant.

Mr. Young did not think that £60 would more than half do to erect a mill, as considerable expense would be incurred in cloths, tubs, &c.

Mr. Warnock was of opinion that a much cheaper and simpler machine might be got than was proposed. He would take in hand to produce a machine which would keep one man at work for ten shillings.

The Provost thought that if a machine which could be wrought with effect could be had for a few pounds, it would be much better than a more expensive one.

Mr. Stirrat thought that it would be better and cheaper for some person to put up a machine as a private speculation, and do the work for others.

Mr. Glen of Hawkhead mills said it occurred to him that it would be an expensive thing to get the stoves. The grating of the potatoes was but a small part of the expense. The difficulty was to keep them in the grated state without being perfectly dried, as they fermented at once. If the matter were gone into on a large scale, they would require to have stoves to dry the flour thoroughly.

Mr. Warnock said, that the great object was to keep the farina clear from the fibre, and if so, it would keep for a long time, even undried. This was to be done by letting the farina subside in the tubs, straining off the fibrine and frequently changing the water.

Mr. Fulton, of Glenfield, starch manufactury, said that the cheapest mode of drying the flour was to extend cloths on poles, and place it upon the cloths, and expose it to a current of air.

Mr. Penfold thought a heat of about 90 to 100 degrees, would be sufficient to dry the flour properly.

Mr. Warnock said, that too much heat applied was apt to make the undried farina run into a gummy state.

Mr. Alexander thought that there was no difficulty about the grinding process at all. The great difficulty which he saw was —every farmer having his own stove. It appeared that a great deal depended on that, and it would cost a deal of money. He did not know whether it would be better to have one mill and stove for a whole district.

Mr. Stirrat thought that at a very small expense a farmer might turn his barn into a stove.

Mr. Young said, that he had been told by Mr. Polson, that eight tons of potatoes, when made into starch, would bring £25, and he expected it to rise to £30. Mr. Polson's machine could put through one hundred and twenty bolls per day, but his machine was so constructed, that, if it wrought twenty minutes, it required to stand idle other 20 minutes to be cleaned.

Mr. Alexander thought that the county ought to be divided into districts, as he thought it would be cheaper to erect mills for the district than for each individual; and when it was ascertained what quantity could be manufactured into flour, and the quantity of potatoes to be grated down, something ought then to be done immediately.

Mr. Young thought that a committee ought to be appointed to go through the country, and examine the farmers' pits, because not one of them believed that any thing was wrong with their potatoes.

Mr. James Young thought as joint stock companies were the order of the day, one ought to be set about at once for that purpose.

The Provost said that it occurred to him, that the result of what they had heard was, that the diseased potatoes should be immediately converted into farina, and it had also been thrown out, that the farina should be dried to prevent fermentation. Another thing stated by Mr. Warnock was, that it would keep equally well in a wet state. It being now admitted that it was necessary to manufacture the potatoes into flour, the question he thought came to be how was that to be done—whether individually, or in county districts; and whether this meeting should take any steps to see this done. He thought that farmers ought to go immediately to those mills already in operation, to see how they ought to proceed. He wished particularly now to know, whether any steps would be taken by the meeting, or by the county generally, to get these mills erected.

After some desultory conversation the following resolution was unanimously adopted, viz.:—"That this meeting, having heard at great length very interesting information and suggestions regarding the important subject of consideration, unanimously recommend—1st, as to the farther preservation of the diseased or threatened crops, that these be immediately taken up, stored in small pits, and thereafter the utmost care taken to preserve them as dry as possible; and 2d, as regards the crops supposed to be beyond the reach of future preservation, that associations or committees, of the farmers and others more immediately interested, be formed in the several districts of the county, for securing, by the erection of grinding mills, &c., the best means of turning such potatoes to account for food or other purposes; and lastly, that a central committee be appointed, with which the district committees when formed may communicate, in regard to their operations, and in the view of directing and diffusing farther information on the interesting and important subject of inquiry.

HOLYWELL FARMING SOCIETY.

HE seventh anniversary of this excellent so-iety was held at Holywell, on the 3rd ult.

The quantity of stock was much less than in rmer years; but in quality the reputation of e society was fully maintained. Lord Mos- yn's bull, to which was awarded the medal as xtra stock, was a matchless animal. Mr. hipley Conway, Mr. Bate, Mr. Bennett, and Ir. Winter also showed some extremely fine nimals. The milch cows were nothing re- narkable. Mr. Llewelyn F. Lloyd and Mr. Bate sent some good Southdown ewes; and Sir Pyers Mostyn also contributed some useful hort wools.

Sir **Richard Bulkeley** remarked in the ourse of the evening, if improvements in the and were to be effected at all, they must begin ith draining—ploughing would be compara- ively useless; draining was, therefore, one of e first subjects to which the attention of such cieties as this should be turned. He was con- nced of its benefit from his own experience in nglesey. It would pay both landlord and nant; and if effectively done, they would get nt. per cent. for what was thus laid out.

Captain **Morgan** then offered some observa- ns on the necessity of economizing labour as uch as possible in ploughing, and giving the tificial manures a fair trial. He thought, wever, that their application of guano should made with the greatest care, for although he d tried it on some land of his own, and found to answer exceedingly well, yet as had been ll said the other day by the Chairman of the uth Cheshire Agricultural Association, if not ed with care, it was almost as dangerous as ussic acid. He had put two cwt. on half a ld of wheat, and manured the other half with ne ploughed in quick, and the produce was ghly satisfactory so far as the guano was con- rned. With respect to the comparative ex- nce of guano and liquid manure, he had last ar emptied his manure-tank and carried it a stance of about a quarter of a mile. It might thought that because they had carts and rses of their own, there was not much expence here; but he found that the cost of doing what he had stated was £3 8s. so that in the end it was quite as expensive as guano.

The Hon. E. M. Ll. **Mostyn** said Sir Richd. Bulkeley had alluded to the subject of draining, and he quite agreed with his remarks. Manure was worth nothing unless they first drained—his plan was to drain and then manure. On some lands in his own occupation, both wet and dry, he had pursued draining operations with the greatest success, and he had no doubt that the observations of Sir Richard Bulkeley would be attended to by the committee, and the omission of which he complained supplied. On a former occasion he had spoken very strongly on the benefit of the use of gorse for cattle, and since that time experience had convinced him that he had not praised it too highly. On some of the land in that district, which was unfit for the growth of anything else, they would find, on making the experiment, that an acre of gorse would be as profitable in many instances as an acre of wheat. Last year he had erected an engine, which cost about £20, to bruise gorse, and he was now enabled with the assistance of a boy, who was paid at the rate of a shilling a day, to bruise in about three hours and a quarter 20 cwt. The cost of labour was thus 4½d. per ton for bruising the gorse, whereas before he put up the engine, to prepare the same quantity would have cost no less than 11s.—The use of gorse for fodder he most earnestly recommended to their consideration; it might be tried on a small scale, and he would pledge himself for the result. There was another subject to which he directed their attention. A few days ago he received a letter from a friend of his, containing a report on the growth of flax, which in some parts of the country was very successfully cultivated; and he had come to the conclusion, that flax would be a very useful and profitable crop in many parts of the county of Flint—not only with respect to the seed, which had been proved to be better than the best oil cake, but the fibres as well. And there was another advantage, that instead of flax being an exhauster of the land it resuscitated it; in proof of which the speaker referred to an instance where, after the flax had been gathered, barley was obtained at the rate of 64 bushels to the acre. It was his intention at all events to give flax a fair trial, and he hoped, if he met them again next year, to be able to report his success in its cultivation.

The **Chairman** presented Mr. Whitley, the efficient Honorary Secretary, with a service of plate.

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DENBIGHSHIRE AND FLINTSHIRE AGRICULTURAL SOCIETY.

The annual show and dinner ot this society were held at Mold, on Wednesday, the 8th ult.

There was a fine troop of bulls, all well adapted for the district. Mr. Dawson, of Gronant, Mr. Parry, of Vaenol-fawr, Lord Bagot, Mr. Wilson Jones, Mr. Sharp, &c. showed some extremely good animals. The one, however, which excited most attention, and which was declared entitled to great commendation, was a pure Devon sent by Mr. West.

In cows and heifers there was great merit; and Mr. Bennion of Wrexhan, and Mr. Turner, obtained medals for some very superior animals. Mr. Dawson of Gronant, Mr. Parry of Borras, Mr. Sharp, Mr. Price of Tower, and others, obtained premiums for very good animals.

In sheep, Mrs. Williams of Celyn, took the lead for short wools; and Mr. Jenkins of Plas-yn-ward, for long wools. Mr. Thompson of Stansty, showed some good animals; as also did Mr. Roberts of Bodedris, and Mr. Humphries of Berse.

The horses on the whole, might challenge comparison with any other district.

P. D. Cooke, Esq presided, and was ably supported by Townsend Mainwaring, Esq. M.P.

In the course of his address, the **Chairman** said—First as to drainage. All acknowledge it to be useful; but the maint poin, how was it to be done? Must it be light or deep? By the sort of tiles now in use, or the tobacco pipe tile? If by the latter, how could the drain be best protected? By being inserted in each other? By flanges? Or by plates being placed between the tiles? He should be glad if the practical agriculturists would discuss these questions, so that they might arrive at some beneficial result. He here exhibited one of the tobacco pipe tiles; and said that as Mr. Matthews said, that macaroni was tobacco pipes made easy, so the pipe drain was the tobacco pipe made larger (a laugh.) He then proceeded to make some observations upon the disease in potatoes, and expressed his hope that it was not general. It did not much prevail in the upland districts, nor in Yorkshire. The anomaly was that it was supposed to be caused by the dampness of the season, and to prevail the most in gardens. He did not think that this was the true solution. He had a letter from a gardener in his pocket, to the effect that in an instance where the potato ground had been twice covered with water there had been no disease. He had also written to a gentleman who resided in a low district in Yorkshire, from which London derived a large supply of this excellent root, and his answer was, that although the land had been repeatedly flooded, yet that they would not have a cart load of diseased potatoes; and he stated that he and his neighbours were in high spirits at the good prices they would get, in consequence of the losses of their neighbours (a laugh.) In that district, some tracts of black earth had been twice covered with water, yet they had no disease.—The next topic he touched upon was with respect to the team work of this district. He stated that in riding through the country, he had observed that there was no provision for descending hills safely with heavy teams. In some instances he had seen the carters resort to the very primitive mode of tying a heavy stone to the cart, and dragging it after. He exhibited a small model of a cheap plan, by which considerable pressure was brought to bear on the nave of the wheel, and to act as a very efficient retarder (hear, hear.) With respect to harvest operations, he said that it had struck him that the farmers had not taken sufficient advantage of what fine weather they had had. This might arise from two causes—first, the indisposition to employ extra labour; and secondly, a misconception of the proper state of ripeness at which it was the most profitable to cut corn. It had been established by chemical t corn was best for food when cut week of being fully ripe. If the quired for seed, then probably the to be fully ripe; but if for the food was obtained when not fully last ripening operation changed husk. He merely threw out these ir consideration. It was of great hat farming should be chymically hically studied. In this country reat variety of soil and climate. many degrees of latitude, and our e extended from the shores of the tops of mountains, such as Moel- was a large field for the intelli- to pursue the enquiries beneficial race, and on the correct result of es depended the happiness and he great bulk of the people, who on the intelligence and industry of rists for the supply of their daily

As a class none was more im- ie stability and welfare of the na- trusted that they would bring o the aid of their industry, and by tage of the suggestions and lessons and science, raise themselves as benefit all other classes of the

INS also observed that he was of the farmers did not pay sufficient he temperature of cheese rooms. cheese got starved; and he would rtificial heat, either by the use of air, should be introduced, when oms were cold. He mentioned a urred last week. He inspected a d been in a room, the temperature d been much neglected. In the the house, which was placed over eese was of the latest make, and rth £5 a ton more than the other. n more cheese was spoiled by neg- ng made than in the making. In uestion, he said that the tempera- d on the size of the cheese.

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ND SOUTH WALES, CHESHIRE, , HEREFORDSHIRE, AND MONMOUTHSHIRE.—We are happy to learn that there is in contemplation an agricultural improvement company for the above district, to be called "The North and South Wales Joint Stock Land Improvement Company." A prospectus, together with a very numerous list of influential directors, will appear in a few days. To such an important company we wish every success, and shall be glad to receive a prospectus when it is ready.—Ed. F. H.

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HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

THE annual meeting took place on the 7th, 8th, and 9th ult., at Dumfries. The exhibition of cattle, horses, sheep, extra stock, and agricultural implements, was as usual very good.

We intended giving a lengthy detail of this important and interesting meeting, but we have only room for the following observations on rearing farming stock, by Mr. STEWART, which were delivered by him at the public breakfast:—

It is on the experience of 12 or 14 farmers, as well as my own—for I have made the experiment almost every year, though on a limited scale—that I take the liberty now of stating what are the results as to profit and loss of the better mode of feeding. Take the case of the great stock of the country—Galloways. A Galloway stirk, then rising one year old, should have 25 lbs. of turnips daily for 150 days, from 1st December till 1st May; during these 150 days he will thus consume 1½ tons. Next year when rising two years old, he should have 37½ lbs. during the same period; during these 150 days he will thus consume 2½ tons; so that putting the two years together, he will have consumed 4 tons. Now, I do not think that I overrate the matter when I state that a Galloway beast so kept will exceed in value one which has not got turnips by at least one-fourth. Or rather, to fall upon figures, I believe I am borne out by experience when I say, that this value will rise, from £8 up to between £10 5s. and £10 10s. These four tons of turnips then, that a Galloway or short horn consumes about 160 lbs. a day. Keeping him, then, in turnips, for about twenty-five weeks, I think I may say with a good deal of precision, that the payment does not exceed *£5*—say nearer *£4*—that is, exclusive of any return for oil-cake; thus we come to the result, that the value of turnips for fat cattle is just about 8s. or 8s. 6d. per ton. Now, there is not any person in Dumfries-shire who has tried the experiment of giving turnips to his young cattle the whole year through, who has not got for them at all events 10s. or 12s. per ton. Every exertion should be made to produce a greater quantity of turnips, in order that the young cattle may be better kept. Those who breed and rear young stock, should, at all events, if possible have sufficient turnips to give them throughout the winter. But suppose thers is a short-coming of turnips in spring, then, in order that the beasts may not fall off, they ought, up till the moment of going to grass, receive a proportion of oil-cake; and it appears to me, that the deficiency of turnips may thus be made up with certain profit. I think I keep within bounds in taking the average price of oil-cake to be under £10 a ton;

May, and their sheds should be well
a length of 4 feet of a 13 or 14 feet
should be given to every beast, and
time, well-aired and roomy.

THE POTATOE MURR

I LEARN, by letters from several for
that the disease which now affects
crops in the Channel Islands, an
parts of England, is universal in B
almost all through France; and a
Morren, one of the University of
described the malady, and the re
immediately applied, I have seiz
moment of leisure to translate pa
which he has inserted in the *Indé*
Brussels, for the benefit of those w
concern. The real cause of the
mildew fungus, which scientific men
the head Botrytis; but which the f
easily distinguish, and will name a s
or burn. Some will attribute it to
others to dry wind, to insects, &c.
less, it is of consequence to know th
of this phenomena, for the knowledg
the farmers on the road to diminish

on the under part of the leaf, or on the seed vessels, that the next day, or two days after the leaf has turned yellow, you can perceive the formation of a white down. The microscope shows that this down is formed by a fungus, which fructifies between the numerous hairs, garnishing the under parts of the potato-leaf. This fungus is extremely thin; but it fructifies immensely, and reproduces itself by millions. The Professor, after having given a minute detail of the size, &c., of this fungus, concludes this part of his letter by saying:—

"Farmers will tell me that this is a very small body to cause such immense ravages; but I will answer that the itch is not a malady less to be feared because the acarus which causes it is a microscope object. It is after the leaves have turned yellow, and the botrytis has made its appearance, that the stem is affected. Here and there the epidermis turns brown and black, and when you follow, with the use of the microscope, the infection, you soon perceive that it is by the skin that the stem is attacked. The morbent agent carries its action from the skin to the epidermis, and though you do not perceive fungus on this last part, it is not the less struck with death. For those who have a few notions of vegetable physiology, these effects are easily explained. The sap modified in living juice, in vegetable blood, forms itself in the leaf, and descends through the skin in the stem and the roots. There the sap being sickly, deadly, carries the poison from the leaf into the stem, and kills it. The fact is, that as soon as the black spots are seen on the stem, the leaves dry and die, and struck with death by a poisonous mushroom, they fall unfortunately to deposit in the ground the germs of the poison. The infection soon descends into the potatoe, and if the malady follows its natural course it is soon affected with the gangrene; it turns brown or yellow, sometimes grey and dark, is soon spoiled, and the smell is so disagreeable, that the animals refuse to eat them."

The disease being now known, the attention of agriculturists ought to be turned to diminish as much as possible the evil; because that it is well known that all diseases which affect the grain crops, &c., once introduced into the country, remain and propagate more and more. This year the epidemic seems to be universal; the germ is everywhere; and if a remedy is not immediately applied, the crops will be affected next year, and then it will become more difficult to extirpate the evil.

1. When the potatoe-haulm is infected with the disease, mow it down, and immediately burn it.

2. Act in the same way in potatoe-fields that seem to have escaped the infection; for though they may appear so to the eye, yet they may not have escaped the disease.

3. The potatoes diseased ought also to be burned.

4. The seed for next year ought to be steeped like corn, &c., with lime, sulphate of copper, and common salt, diluted in water, in order to kill the fungus, if any, on the potato.

5. The potato-fields ought to be next year as far off as possible from those of this year.

6. A mixture of lime, common salt, and sulphate of copper, to be powdered on the potatoe fields infected: this mixture having the power of destroying the poison left in the ground by the infected plants.

For my part, I still hold to the opinion by me emitted, and I have seen nothing as yet to make me alter it--that the disease, in the first place, has taken its origin by the dampness and cold air which has been so prevalent during the summer season. Since the warm weather has set in, about three weeks, the disease seems to have made but litte progress; the tuber has been but partially affected, and though swelling but little, seems to be sound and good. Nevertheles, the crop is a failure, averaging about half a crop.—*Richard Giffard, Bellevue Cottage, St. Peter's, Jersey.*

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STEEP FOR CORN AND BEANS.—Phosphate of soda, phosphate of magnesia, nitrate of potash, common salt, sulphate of ammonia—1lb of each in 10 gallons of water to steep 300lbs. of seed. To be dried with gypsum or quicklime.—*Farmer's Almanack.*

It was last year treated in the ordinary way for turnips, and the following manures applied in the quantities given, per imperial acre, viz.:—Rotted farm-yard dung, 11 tons; Peruvian guano, 1½ cwt.; and 4 bushels of bone-dust, digested with sulphuric acid, according to the prescription by Dr. Shier, in his edition of Sir Humphrey Davy's Agricultural Chemistry. The whole crop came up remarkably well, and was generally thought among the best in the district. The return per imperial acre, by the weight of bulbs alone, was 16 tons 10 cwt. 18lbs. Part of them was let to a butcher, to be eaten on the farm, for £7 10s. per acre, fully a higher price than was given in this quarter at the early part of the season.—*Alex. Ewing, M. D.*

Cabbages are much benefited by liquid manuring between the rows; if urine is not available, it may be made with 11 lbs. of guano, and as much salt, to a hogshead of water, that is 11lbs. of each to 3 gallons. The guano may forward the plant as fast, or faster without the salt, but it may make it tough, the salt being to give it tenderness. Common liquid manure or dung drainings will do, or even soot and water, 2lbs. to 3 gallons, but all would be

fitable improvements to be ha
useful and valuable information c
ject is to be found in the variou
tural works published in Engla
greater the circulation of such wc
district, the greater will be the
useful knowledge within ever
reach. It is stated as an undou
by one of the most intelligent
the district, that he has notice
servation, that those farmers
been in the habit of taking an
agricultural papers, raise general
crops; and that he never opens
papers without finding it to co
information more than equal i
him, the cost of the subscript
paper.

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ABSTRACT OF THE DRAIN
INCLOSURE ACTS OF LAST

(Continued from page 292.)

(PREPARED EXCLUSIVELY FOR TH

Inclosure Act, 8 *and* 9 *Victoria*, c
August, 1845.

XVI. The persons interested in lands
applications, &c. are the persons who shal
tual possession or enjoyment of any suc

' such persons; and in every case in which any
, common, or common right, or manor, shall
leased or agreed to be leased to any person
s for life or lives or for years by any lease or
t for a lease on which a rent of not less than
s of the clear yearly value of the premises
l therein shall have been reserved, and in
: in which any such land, common, or com-
t, or manor, shall be in the possession of a
m year to year at will or sufferance, or shall
leased or agreed to be leased for a term which
have exceeded 14 years from the commence-
reof, the person who shall for the time being
l to the said land, common, or common right,
, in reversion immediately expectant on the
ted or agreed to be created by such lease or
t for a lease respectively, or subject to the ten
a year to year at will or sufferance, shall be
or the purpose of this act to be the person inter-
foresaid in respect of such land, common, or
right, or manor; and in every case in which
land, common, or common right, or manor as
, shall have been leased or agreed to be leased
rson for life or lives, or for years by any lease
nent for a lease in which a rent less than two-
' the clear yearly value of the premises com-
erein shall have been reserved, and of which
shall have exceeded 14 years from the com-
ent thereof, the person who shall for the time
in the actual receipt of the rent reserved upon
e or agreement for a lease shall, jointly with
n who shall be liable to the payment of such
ch land, common, or common right, or manor,
d for the purposes of this act to be the person
l in respect of such land, common, or common
manor respectively; and in every case in which
n shall be in possession or enjoyment or re-
he rents or profits of any such land, common,
on right, or manor, under any sequestration,
legit, or other writ of execution, or as a re-
der any order of a court of equity, the person
for such writ or order would have been in pos-
enjoyment, or receipt of the rents and profits,
ntly with the person in possession, enjoyment,
t by virtue of such writ or order, be deemed for
ses of this act to be the person interested in
f such land, common, or common right, or
spectively.

Where the Crown is interested, the first Com-
r of Woods, &c. shall be substituted.

. Where Duke of Cornwall is interested, the
rden of the Stannaries shall be substituted.

Persons jointly interested who shall vote.

n case of legal disability, or absence abroad,
ioners to name substitutes.

Attornies may be appointed by persons inter-
form set forth.

Proportional interests, how estimated.

.. Proportional interests of Lords of Manors to
ated as Commissioners may direct.

. Commissioners to frame forms of applications
sons proposing to inclose.

Upon application to the commissioners, an as-
ommissioner to inquire into the expediency of
inclosure.

. Assistant commissioners to report on ap-
.

I. Commissioners to embody the conditions of
inclosure in a provisional order, and to take
of parties interested.

II. Separate applications for separate tracts.
nterested to the extent of two-thirds to consent.

. Consent of the Lord of the Manor, or where
n one lord, consent of majority of persons in
f interest.

Allotments for exercise and recreation may be
as conditions of inclosure.

. Such allotments for labouring poor as commissioners may think necessary, to be subject to a rent-charge.

XXXII. Acts for the inclosure of lands in pursuance of the reports of the commissioners to be deemed public general acts.

XXXIII. Meeting for appointing valuer to be called by commissioners after 30 days from publication by them of notice of their intention to proceed under this act; 21 days notice of such meeting; majority in number and interest at such meeting to appoint valuer; if majority in number and value shall not agree, commissioners to appoint the person to be appointed valuer who may be interested.

XXXIV. Instructions to valuer so appointed.

XXXV. Valuer upon determining contested claim or objection, or awarding costs, if he think proper, may be assisted by an assistant commissioner; or if persons interested shall, by their instructions so direct, such assistant commissioner to be a barrister of five years standing.

XXXVI. No alterations in the instructions to valuer by commissioners to be acted upon unless sanctioned by a majority of the persons interested at a meeting called for that purpose, with 14 days notice.

XXXVII. A surveyor may be appointed where the parties interested think fit.

XXXVIII. Form of declaration by valuer.

XXXIX. Power to set out boundaries of parishes.—Appeal on questions of boundary to a jury summoned by sheriff, and hearing before assistant commissioner; verdicts to be reduced to writing, certified to the commissioners, and be conclusive.

XL. Jurymen or witnesses not attending rendering them liable to a penalty of £10.

XLI. Juries subject to the same regulations as if returned at any court at Westminster.

[TO BE CONTINUED]

Reviews, &c.

On the varieties, properties, and classification of Wheat. By John Le Couteur, Esq. London, H. Wright.

The improvement manifest even in the course of a few years successful cultivation of many of our most valuable agricultural products would seem to stimulate to fresh exertions those who have given their attention to the growth of *wheat*, with the very laudable purpose of improving the size of its grain and its quality, as an article of human food. How far increased success may follow such endeavours time alone can determine: this much is quite clear that little has been done for the last 2000 years in this respect.

The mummy wheat, of which samples have been sown in several parts of this kingdom, shew us that in the high and palmy days of Egyptian prosperity, wheat was pretty much as we now find it. It has at the present day very much the same appearance all over the world, and although new varieties are raised in this country, they may in a general way, we opine, be traced perhaps to disease, which may in the first place alter the size or color of the grain, or to climate, which may give a degree of temporary hardiness to the plant with early or later maturity.

There is no subject, however, upon which an agriculturist can so well employ his time and attention, as the consideration of this most important production.

Col. Le Couteur comes before us as one well known to have expended upon wheat much reflection and much practical observation. He begins his work very properly with the several varieties of wheat, quoting the number of them from the *Maison Rustique* for 1835, at 39.

The gallant author proceeds to point out "Faults in ordinary practice"—the principal of which he describes as a want of care in the perfect separation of various kinds, from which arises the evil, when the seed is mixed, of an unequal ripening, and lean shrivelled grains, affording of course a light and unsatisfactory crop. He also lectures us very pleasantly on "The choice of seed," and thus describes his attempts to raise pure seed:—

" Professor La Gasca, having shewn me four ears of those he considered the most productive, I sorted as many as I could collect, of precisely the same varieties, judging by their external appearance.

" Such was my anxiety to attempt to raise a pure crop, that, in the month of November, 1832, I rubbed the corn from each ear, of all the four sorts I had selected, throwing aside the damaged or ill-looking grains, and reserving only, the plump and healthy.

" The first selection was apparently one wholly of a Dantzic sort—white and smooth-eared. In the process of rubbing out the corn, I was much surprised to find that, though most of the grains were white, they differed greatly *as to form*; some being round, some oval and peaked, some plump but very small, some more elongated, some with the skin o much thicker than others. There we many liver-coloured, yellow, and dark among the white.

" The second sort was from a squar pact variety of wheat, the grains bei plump, round, of a coffee-like form, ve skinned and white. There was a pale r rior variety among it, much thicker-s but without any perceptible external app in the ear.

" The third, was a downy or hoary one of the " Veloutes" of the Fren " Triticum Koeleri" of Professor La G velvetty or hoary sort, which is suppos very permanent in its duration, as re keeping pure. I found moreover, th were a few red grains, some yellow, a liver-coloured sorts amongst this, in sm portions it is true, but being of prolifi subsequent experience has taught, th would soon have destroyed the purit crop, if cultivated without constant atte

" The fourth selection was from a v red ear with yellow grains, more pea the " Golden Drop ;" these were all pl well grown, but though of productive afford less flour and more bran than t varieties. I discovered a red variety it, bearing white grains, which I susp very prolific and hardy. I gave a sam to the Right Honourable Sir John who greatly encouraged me to prose researches, as being of the highest im There were also red ears, bearing liver- grains, but these were chiefly lean grown.

" I generally, but not invariably fou the grain of white corn was the plum possessing the greatest specific gra largest quantity or meal, a subject to shall devote a short chapter.

" The aspect of the grain in that dry led me to suspect, that white sorts of wh succeed best on dry soils and in warm c and that red and yellow, or the darker c prefer wet seasons or moist soils.

" The care I took in making these selections, and the great number of sorts I found, of all shades and colours, forming varieties and sub-varieties, as they are named by Professor La Gasca, confirmed my conviction that the only chance of having pure sorts, was to raise them from single grains, or single ears.

" It is but fair to add, that even the pains I took in making those first selections, amply rewarded my labours, as the produce of my crops was increased from an average of about twenty-three or twenty-five bushels an acre, to about thirty-four, and since I have raised wheat from single ears or carefully selected sorts, I have increased my crops to between forty and fifty bushels the acre. Hence, I have no doubt, that with extreme care, in obtaining the best and most suitable sorts of wheat, that land in high tilth, with fine cultivation, may be made to produce sixty or seventy bushels the acre.

The author gives a very interesting account of his " first comparative experiment," and describes very minutely " the roots and growth of wheat." Indeed the whole work shews an intimate knowledge of his subject on the part of the gallant author, who in his " conclusion" gives in a letter to the council of the Central Agricultural Society the following very interesting account of a French Agricultural School and Model Farm :—

In July, last year, having read in a French Agricultural publication, an account of an experimental farm and school, at Coetbo, in Brittany, about 300 miles from my residence in Jersey, I visited it in the hope that it would be useful to the Society, of which I am Secretary.

It is situated in a beautiful and fertile country, well wooded and watered, but cultivated by the " Breton" farmers, just as their forefathers tilled it two hundred years ago. The College farm appears like a garden in a smiling wilderness, so far as culture goes. I rose at four in the morning in order to witness the whole course of labour in this interesting institution.

There were from eighty to ninety Students under the superintendence and tuition of a Director, a Professor *of Agriculture*, and Agricultural Chemistry, a Veterinary Surgeon, and an Agricultural Implement-maker.

At half-past four they took a slight repast, and as the clock struck five, all were employed, some in harnessing the oxen and horses; others in carting out, and properly disposing the implements in the field; others set to hoeing, others weeding, some ploughing, some hay-making, in a word to the various labours of the season.

The School is divided into working parties of ten, at the head of each, is a steady young man of experience, called the " Decurion" who directs the work of his party. In all difficult operations, a regular farming labourer is at hand to perform them, but such is the ardour and perseverance of the youths, that they rarely allow any difficulty to arrest their progress. The duty of one decury or ten, is to dress, feed, and litter, the cattle with as much regularity as a Cavalry corps dress their horses, also keep the farm yard in order; thus, all in turn, are made acquainted with every thing connected with a farm, whether in regard to horses, oxen, cows, pigs, or manures. These last are made and husbanded, with the greatest care, the mixons being formed of sweepings, leaves, and weeds that had not seeded, in alternate layers with stable manure.

The drainings of the stables, and straw yard, run into a tank to be pumped out when required as liquid manure, which is the best, most portable, but least known in this country.

The learned Professor M. Donker, who is an admirable practical farmer, as polite and as communicative as he is learned, complained that he had not sufficient manure. I urged him to burn the underwood, and decaying timber of the large adjacent forests, through which wide roads were cut, which would enable him to obtain an inexhaustible supply of ashes, the best of manures, either for turnips or wheat; the cartage of ashes being easy, and the quantity required to dress the land, not great: in which he entirely coincided.

At nine all come in to their studies, when they write remarks on the various operations of the morning. From 11 to 12 is the breakfast hour. From 12 to 3 is time for recreation and study, which embraces for the first class, questions of the following nature:—This farm of 600 acres, one eighth of which, is always to be in beet root, is to be divided into the most eligible rotation of crops. Shew the most profitable course, and describe the nature and chemical properties of the soil in each field, the proper manures to be applied to them, the quantity of seed required for the crop, its culture, by previous ploughings, by after hoeing, or weeding, the cost of labour, and the probable return?

The plan of farming given by some of the youths would have done credit to an experienced farmer, and demonstrated clearly that though theory alone in farming, is an absurdity, the combination of practice, with scientific acquirements will soon operate great amelioration in the agricultural world. From three to seven, they prosecute their labour in the fields, being eight hours' work in the day. They then come in to dinner. At eight the director receives the report from every decurion, of the day's work, of his party of ten. He then orders the work for the ensuing day, giving a concise lecture on the sudject when necessary, to the proper culture of any unusual crop. A library of agricultural works is open to the students till bed time, a quarter past nine.

The greatest order and regularity prevails in this admirable establishment, which is supported by the French Government, and by voluntary contributions; there are two students from forty departments of France, besides a few more who pay for instruction.

Some of them had been in the learned professions, of law, medicine, and civil engineering, who having inherited estates, and being desirous to superintend and cultivate their farms, came to the school to learn husbandry, farm-account keeping, the mode of rearing and feeding cattle, and all rural pursuits. The uniform, a blue smock frock, with a straw hat and red ribband, contributed to give an air of rustic cheerfulness throughout the whole establishment.

The crop that appeared to me to be most *carefully* cultivated, was beet root, in drills, *which* produced per acre about seven hundred and fifty pounds of fine sugar, selling at ten pence the lb., as fast as it could be manufactured. The potatoe crop was fine, very well horse hoed and perfectly clean.

The wheat crop was good, much better than that of the "Breton" farmers around, but foul with weeds, from not having been made in drills, which I recommended in future, until the weeds were extirpated from the soil. Indeed I ventured to urge the propriety of having all the crops in drills for the same reason. The Swedish, and other turnips were also fine and clean.

There were besides these principal staple crops, experimental crops of nearly 300 varieties, which it is unnecessary to enumerate, though some may become of paramount use to the farmer, such as the giant or red clover "trifolium incarnatum," which is an admirable supplementary crop when the turnip crop has failed; I strongly urge farmers to try it, on a small scale first. It may be sown as late as September, and furnishes a prodigious quantity of food in April or May, producing the finest butter possible if given to cows.

The students attend to the culture of these crops, study their nature, properties, and their effects on cattle, which are daily, nay sometimes hourly, noted.

In turn they are present at all veterinary surgical operations, either on horses or horned cattle, and an explanatory lecture, one of which I witnessed, forcibly impresses on the minds of the students, the nature and cure of the disorder.

The professor of agricultural implements, for thus he must be termed, demonstrates mathematically the points of greatest or least resistance, in the construction of all instruments and ploughs, all sorts of which, from the primitive plough of the Lyonnese, a mere beam fifteen feet long with a hook at its end, to the improved Norfolk or Scotch swing ploughs. Most modern implements were to be seen here, the Flemish binot, new harrows, dibblers, drills, horse hoes, winnowing machines, turnip ellicers, chaff cutters, all made up in the college work shops, in many instances by the students; any such as display a decided taste for mechanics, carpentry or even smiths' works being allowed to indulge it, under the eye of the professor.

Here then, were a number of intelligent, active, and enterprising youths, all ardent in the pursuit of that knowledge which is the fiat of the most High, collected from every quarter of their beautiful, fertile, and extended country, imparting to each other a knowledge of its local wants, its various products, its agriculture, manufactures, and commerce. All anxiously occupied in the enquiry, what might be most useful and beneficial to fill and replenish their fertile soil, all desirous to convey to their respective districts the knowledge thus acquired: these youths on their return home, would naturally preserve reciprocal ties of friendship with those whom they might never meet again, but whose correspondence on subjects relating to husbandry and the products which they might exchange, would cement those ties.

Can any reflecting mind deny that such an institution must prove eminently useful to an agricultural country? The truth is, that our intelligent and active neighbours have at length perceived and anticipated, that to act in detail and as a divided body, is not the means to attain great results—they have therefore stepped into unity of design, a day before ourselves.

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Quarterly Journal of Agriculture, &c. W. Blackwood and Sons, Edinburgh and London.

The first paper in the present number is from the laboratory of the Agricultural Chemistry Association of Scotland, in defence of certain doctrines of Mulder, whose work we previously noticed, and which have been attacked by the *Agricultural Magazine*, (*vide* No. for April.) Mr. Fromberg, the writer, gives a detailed account of an experiment of Mulder, whose pupil he was, shewing:—

1. That rain-water and atmospheric air are insufficient to support the life of plants.

2. That rain-water, wood-ashes, and air, are equally insufficient.

3. That the aqueous extract of humus contains too small a proportion of organic matter, to afford to plants all that they require.

4. That ulmic acid from sugar, though devoid of nitrogen, is really advantageous to the growth of plants.

5. That humic acid from garden mould is very useful in vegetation.

6. That humate of ammonia, from peat, is advantageous to the growth of plants.

7. That charcoal and ashes are inferior to arable soil, or to the substances mentioned in 5 and 6.

Upon which Mulder advanced the following opinions:—

> 1*st*, That the several organic constituents of the soil, namely, the humic, ulmic, geic, crenic, and apocrenic acids, after being combined with ammonia, are, as such, taken up by the roots and assimilated by plants, on the ground that the compounds which these acids form with ammonia are so very readily soluble in water, and because these several acids possess polybasic properties, by which they are enabled to form combinations with potash or soda, ammonia, lime, magnesia, and oxide of iron, in which several of these bases are present at one and the same time.
>
> 2*d*, That ammonia is formed in the soil by the combination of the nitrogen of the atmosphere with hydrogen in the nascent state, as liberated during the decay of vegetable and animal substances in the soil.

In defence of these doctrines Mr. Fromberg writes a very interesting paper "*On the source of the carbon and nitrogen in plants, as derived from the soil.*"

Dr. Thomson follows with a "*Notice of some agricultural analyses made by Students in the Glasgow University Laboratory.*" After describing analyses of *Greywacke* soil, and *Greenstone* soil, by Messrs. James M'Bryde and James Paterson, the Dr. proceeds to give an account of two specimens of British guano, one taken from Ailsa Craig, and the other from the coast of Ireland. The Dr. gives us an excellent reason why lime in some districts is valuable as a fertilizer, for he states:—

> The experiments made in the Glasgow laboratory have proved the existence of phosphoric acid in the Irish limestone in minute quantity, but in a somewhat greater amount than in the English chalk—thus establishing chemically the parallelism of these two rocks in a geological point of view. The determination of this fact

was conducted by Mr. John Thomson, A.M., in a mast satisfactory manner. Limestone from Lorne, which is employed abundantly at Glasgow and on the Ayrshire and Wigtonshire coasts, was examined and compared with chalk from Cromer on the coast of Norfolk. The results were as follows:—

Phosphoric Acid in Cromer Chalk	0.77 per 1000 grs.
.... Irish Limestone	0.905 ..

He then proceeds with an account of Scottish magnesian and common limestone in the following:—

Scottish Magnesian Limestone.—I requested Mr. James C. Stevenson to examine the magnesian limestone of Sutherland for phosphoric acid, but we could not detect a trace of it in 1500 grains. We then turned our attention to the magnesian limestone of Berwickshire, as found on the Tweed between Kelso and Coldstream, and formerly burned at Hadden, and which I had found some years ago to possess the following composition:—

	1.	2.	3.
Specific Gravity	2.723		
Carbonate of Lime	49.600		
Carbonate of Magnesia	44.000		
Silica	4.000		
Phosphate of Iron		0.74	0.727
Peroxide of Iron	1.200		
Alumina	1.000		

We found it to contain a decided amount of phosphoric acid, as exhibited in two trials made by Mr. J. C. Stevenson.

A similar limestone exists in Stirlingshire, at Boquhan, and is believed to extend to the south-west, although I have not had an opportunity of tracing it. For the opportunity of examining this limestone I am indebted to the attention of William Murray, Esq. of Polmaise. The specific gravity of this limestone varied from 2.753 to 2.830 and 2.833.

The following are analyses of four different specimens:—

	1.	2.	3.	4.
Carbonate of Lime	53.09	56.07	53.06	54.00
Carbonate of Magnesia	43.49	39.34	43.11	
Phosphate and Peroxide of Iron.	0.96	0.74	2.34	
Silica and Alumina	2.46	3.85	1.49	

The first analysis was made by myself; No. 2, by Mr. Archibald Sinclair, Hillhead, Stirling; No. 3, by Mr. John Thomson, jun.; and No. 4 by one of my assistants.

By three analyses, the composition of this limestone was ascertained to be, stating it in another form—

	1.	2.	3.
Lime	29.73	27.886	
Magnesia	22.50		20.465
Phosphate of Iron	0.96	0.431	0.279
Silica and Alumina	2.46	0.762	2.958
Carbonic Acid and Water	44.35	47.721	46.500

Common Limestones.—It becomes interesting to compare these analyses with common limestones from the same neighbourhood. The two following analyses exhibit the composition of of specimens of limestone from different parts of the strata at Murrays-hall, as made by Mr. Archibald Sinclair under my direction:—

	1.	2.
Carbonate of Lime	93 32	97.80
Peroxide of Iron	2.79	0.63
Coaly Matter	0.28	0.64
Silica and Alumina	1.36	1.92

I am not aware that magnesian limestone has previously been noticed by geologists as occurring in the interior of Scotland. The circumstance of its containing phosphoric acid is sufficient to distinguish it from the magnesian limestone of England, and should render it a subject of interest to agriculturists. It is from the magnesian limestone that the magnesian salts are produced with the greatest facility, and these are of great value to the farmer. By treating the Boquhan and Tweed limestones with sulphuric acid diluted with water, a solution of Epsom salt is obtained, and gypsum or sulphate of lime is produced, both valuable as manures. The same observations apply to the magnesian limestone of Berwick and Roxburghshires.

And in conclusion he thus argues in favour of a chemical education, not only for farmers and professional men, but in short for all.

Time will not permit me to detail many other analyses which have been conducted by agricultural pupils and others. Those which have been enumerated are sufficient to shew that, even at an early age, by careful repitition of an experiment, benefit to the cause of science may result, and important habits be acquired, which will ultimately be invaluable. Without the acquisition of such habits and such education by farmers it is in vain to look for any permanent advantage in agriculture. Without a practical knowledge of chemistry they will either be sceptical or apathetic, as the chemical language addressed to them must be unintelligible, or they must be continually liable to the deceptions of chemical empiricism. The expense of studying practical chemistry is generally overrated—and the arrangements now adopted in the Glasgow University laboratory will bring this study within the reach of most young men who desire to improve their minds by the study of one of the most valuable and interesting sciences with which man can occupy himself. But, as a branch of general education, there is perhaps no study equally calculated to develope the mind. To make an analysis, that le a body composed of many parts ther into its ultimate constituents, a ıst remember and reason if he is .ught; and, if he enters upon a re- : is, a combination of analyses, one arising out of another, until the lts enable a conclusion to be drawn, s a disciple of Lord Bacon—an in- losopher—the safest condition for all for every profession. In respect, : important knowledge to be acquired ratory, the training which the mind is of the highest value, and I may h confidence, to all those who have ɔugh the studies of the laboratory, hatever their future occupation in life they have not had their powers of sharpened, and their appreciation improved by their chemical educa-

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.GE OF ENTAILED OR SET- ESTATES IN ENGLAND.

have pleasure in presenting our ith the *practical* sections of the on the 31st July last, to facilitate ıge of settled estates. It is the 1 9, Vict. c. 56, and the only diffi- is the arrangement of the details, f this more fully in a future num-

—The inhalation of the ammo- arising from guano, ought to be avoided. The dry sort is much dicial to human health than the

The Markets.

oubted failure of the potato crop all ɔe, (from which England will suffer ıan it at present appears) will affect ısly the price of grain. WHEAT *ɔt for a short period between this and —rent-days being on—maintain an price, and the point to which it will rise between this and March next, it to prognosticate; but doubtless, unless : arrivals are more extensive than we estimate them, the figure will be high. ıtoes next April will bear any price be imagined; indeed, our conviction vill be only with the greatest difficulty, skill and care, that even small quanti- preserved throughout the winter.* BARLEY *is better sold. In* OATS *a rise has been established altogether of 2s. per quarter within the last week.* BEANS *has been sold at rates not previously obtainable.* PEAS *have commanded high prices.*

	s.	d.		s.	d.
Laid Highland Wool, per 24lbs..	9	6	to	10	0
White Highland do............	12	9		13	3
Laid Crossed do..unwashed ..	11	6		13	0
Ditto do...washed	12	0		13	6
Ditto Cheviot do..unwashed ..	11	0		13	6
Ditto do..washed	14	0		17	9
White ditto do	24	0		26	0

LONDON, Oct. 27.

	Per Qr.		
WHEAT, Essex and Kent, new, red	58	62	64
White................	60	64	68
RYE, new		38	40
BARLEY, Grinding		32	35
Malting		—	38
Chevalier............		40	42
Irish................		28	30
Bere................		26	27
MALT, Suffolk and Norfolk		58	63
Brown		56	60
Kingston and Ware		60	—
Chevalier..............		65	—
OATS, Yorksh. & Lincolnsh., feed		30	31
Potatoe................		30	34
Youghall and Cork black..		29	30
Cork, white		29	32
Dublin		—	29
Black		25	26
Scotch feed		29	31
Potatoe................		29	30
Limerick..............		28	30
BEANS, Tick, new		44	48
Old, small		52	54
PEAS, Grey		44	46
Maple		45	46
White		52	54
Boilers		—	56

SEED, Rape, 27*l.* 29*l.* Irish, 22*l.* 26*l.* per last.
Mustard, White......12 18
Brown ....10 15 per bush.
FLOUR, Town-made 55 60
Suffolk.... 50 — per sk. of 280 lbs.
Stockton and Norfolk .... — 48

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		54	56
Hamburgh..............		50	52
Rostock		52	54
BARLEY....................		25	26
OATS, Brew		24	28
Feed		—	25
BEANS	—	44	48

Peas	42	46
Flour, American, per barrel	28	30
Baltic	—	30

LONDON AVERAGES.

Wheat	10820	qrs.	£3	4	0
Barley	1336		1	16	7
Oats	27188		1	6	7
Beans	834		2	1	9
Peas	2548		2	8	1
Rye	51		1	17	7

SEED MARKET.

	s.		s.
Canary, per qr.	50	to	52
Carraway, per cwt.	42	to	44
Clover, red, English	45	to	50
,, ,, Foreign	40	to	48
,, white, English	60	to	62
,, ,, Foreign	50	to	62
Coriander	12	to	18
Hempseed, per last	35	to	38
Linseed Cakes, Eng. p. 1000	£11	to	£11 5s.
,, ,, Foreign, p. ton	£7 7s.	to	£7 10
Mustard, white, per bushel	10	to	14
,, superfine ,,	12	to	18
,, brown ,,	10	to	15
Rapeseed, English, per last	£25	to	—
Tares, English, spring p. bushel.	4s 0d	to	6
Foreign ,, ,, ,,	3s	to	5

LIVERPOOL, Oct. 28.

	s.	d.	s.	d.
Wheat, Eng. wh., new, ℔ 70lbs.	9	9	10	2
Ditto, red	9	2	9	6
Irish white, new	8	3	8	4
Egyptian	0	0	0	0
Oats, Eng. mealing, ℔ 45lbs.	4	3	4	6
Irish	4	1	4	2
Welsh	4	0	4	2
Barley, Eng. malting ℔ imp. qr.	0	0	0	0
Grinding	0	0	0	0
Irish and Scotch	4	6	5	0
Rye, per imp. qr.	36	0	38	0
Beans, English, per imp. qr.	48	0	54	0
Irish and Scotch	46	0	48	0
Foreign	46	0	50	0
Egyptian, per 480lbs.	41	6	42	0
Peas, English, per imp. qr.	53	0	55	0
Foreign	50	0	53	0
Canadian	48	0	50	0
Malt, per imp. qr., fine	62	0	66	0
Flour, English, per 280lbs.	50	0	53	0
Irish	48	0	51	0
Foreign, duty-paid, per 190lbs., U.S.	0	0	0	0
Canadian	36	0	36	6
Oatmeal, English, Scotch, and Welsh, per 240lbs.	36	0	38	0
Irish	35	0	36	0
Indian Corn, per 480lbs.	34	0	36	0

PRICE OF AGRICULTURAL PRODUCE

Liverpool, Oct. 28.

			Potatoes.	s.	d.
Hay, best p.st.	0s	11½	Short tops	1	5
Clover ditto	0	9	Red apple	0	0
Green ditto	0	1½	Cups	1	9
Vetches	0	0	Cattle	1	3
Straw.			Turnips pr ton	22	0
Wheat	0	6	Carrots	34	0
Oat	0	6	Manure	7	0
Barley	0	7			

Cattle Markets.

LONDON, SMITHFIELD.

Oct. 27, 1845.

	℔ st. of 8 lbs.				
	s.	d.		s.	d.
Inferior coarse beasts	2	6	to	2	8
Second quality do.	2	10	to	3	4
Prime large Oxen	3	6	to	3	10
Prime Scots, &c.	4	0	to	4	2
Coarse and inferior Sheep	3	8	to	4	0
Second quality do.	4	2	to	4	4
Prime coarse woolled do	4	6	to	4	8
Prime Southdown do	4	10	to	5	0
Large coarse calves	4	4	to	4	10
Prime small do	5	0	to	5	4
Large Hogs	3	10	to	4	6
Neat small Porkers	4	8	to	5	4

LIVERPOOL, Oct. 27.

	s.	d.	s.	d.
Beef, per lb.	0	5	0	5¼
Mutton	0	6	0	6¼
Lamb	0	6½	0	7

MANURES.

Subjoined are the prices of several sorts of of manure :—

Bone dust, 17s. per qr.

Half-inch Bone, 15s. per qr.

Artificial Guano, £9. per ton. 15s. per cwt.

Guano, 10s. to 12s. per cwt., according to quantity.

Rape Dust, £6. to £6. 6s. per ton

Rape Cake, £6. per ton

Gypsum, at the water side, 35s. 0d. per ton: landed and housed, 38s. to 42s. per ton,

Nitrate of Soda, 16s. 0d. (duty pd.) per cwt.

Nitrate Potash (saltpetre) 26s. per cwt.

Preparation for Turnip Fly 10s. 6d. per packet, sufficient for three acres.

Muriate of Ammonia, 24s. per cwt.

Muriate of Lime, 6s. per cwt.

Compost, £3. 12s. 6d. per hhd. sufficient for three acres.

Alkalies, 28s. and 42s. per cwt.

Sulphuric Acid, 1½d. per lb.

Sulphur for Destroying Worm on Turnips, 12s per cwt.

THE BRITISH CULTIVATOR,

AND AGRICULTURAL REVIEW.

DECEMBER—1845.

ttention has been repeatedly called the last eight months, to those erial measures, which aimed at strength and assistance to the two springs of all Agricultural Improve- Draining and Inclosure. The hich were brought into Parliament, rd Lincoln, were expressly included Premier in the list of those remedial res which he was determined to press d during the last Session, and we ed with considerable anxiety the

Inclosure Bill has become law,—the issioners to superintend its execution been appointed, and we have pre- to our readers an abstract of its ions. The Bill for facilitating the ge of lands, certainly the most im- t of the two, did not receive the assent. Good reasons we have no will be given at the meeting of Par- t for this delay ; we, ourselves, can ut several reasons why the Bill ought have passed in the shape in which it —and we have no doubt that Lord ln will see the necessity of consulting cal men upon the subject of some of esent provisions, as well as upon which ought to form part of it.

ilst upon this subject, we would ask, he tenant *for life of an estate which s draining, or rather, why* the estate, for that we apprehend would be the effect of it, is to be saddled with the cost of a Chancery enquiry? certainly, the most expensive and dilatory of all enquiries, before the money can be raised by loan for effecting the drainage of it. We make this enquiry, because we perceive by an Act of the last Session 8 and 9 Victoria, cap. 56, an application to the Chancellor by a tenant for life for power to charge the estate with the sum required for its drainage is rendered necessary; which application, as prescribed by the Act, entails the further expence and delay of a reference to a master in Chancery, who is to enquire and report to the Chancellor, before leave is given to charge the estate with the money required. We ask, why is this?

We admit the necessity for properly protecting the heir in tail against the possibility of a charge being created from which he may not derive an equivalent advantage. But where is the necessity, we would again ask, for an application to the Chancellor, who knows nothing of the matter, except upon the report of the master, who personally knows no more about it than his lordship. The object of the contemplated law of last session, is to place the drainage of the country under the control of commissioners, who, like the tithe commissioners, are invested with large powers. Why, therefore, in the name of common sense, not let the charge for drainage be created upon the certificate of an assistant-commissioner (who is likely to know rather more of the circumstances of the case than a master in chancery) that the money has been laid out in the drainage of the estate to be charged.

The proper drainage of the lands which, in England, most require it, viz. the retentive clays, is a matter of great national importance. Those lands are for the most part rich in fertilizing properties, and afford an almost inexhaustible source of profit to the country, when properly drained. The crops of wheat which they bear are most luxuriant, and the grain of a weight and flavour far surpassing the best foreign which we can import. Large tracts of such lands now lie water-soaked and impoverished to the last degree, and are of little worth; but which, by the operations of the act, if properly considered in the ensuing session, will be rendered more fertile and valuable than almost any other portion of the kingdom.

We beg, therefore, to call the attention of our readers to the Bill as it at present stands, urging upon them the importance of considering its provisions, and of pointing out to its supporters any amendments which they may think necessary to its perfection, so that when its consideration shall again occupy the attention of the legislature, all improvements of which it is capable, may be introduced, and all objections to any of its provisions may be removed.

The country imperatively demands that something be at once effected to increase to the utmost the productive powers of the soil. The requisites to this are abundant, in the form of capital, labour, and skill; and all that is wanting to ensure their speedy application is, that the laws be so framed as to protect and encourage the possessors of them in their employment.

That these laws must be simple in their arrangement, and economical in their application, in order to afford due encouragement, is obvious. It is of little use to tell the owner of a life estate, that he may drain with borrowed capital, if you impose upon him so many costly forms as shall amount to a positive prohibition, to exercise the powers you confer upon him.

Every support should be given by the legislature to any measure likely to induce the free application of capital to the improvement of the soil, as well by draining as by the Inclosure of commons and waste lands; and those Joint Stock Company's which are formed or forming in various parts of the kingdom for these purposes, have a just right to expect all the aid which Parliament can give them. We do not go to the length of asking for grants of public money for these purposes, because we feel confident that the outlay for either one or the other purpose, will be sufficiently profitable if properly made, to ensure from private sources any amount necessary for England and Wales, and we are sanguine enough to believe, for Ireland too.

◆

ON MODERN IMPROVEMENTS IN THE PLOUGH.

" Ye gen'rous Britons venerate the plough,
And o'er your hills and long-withdrawing vales
Let autumn spread her treasures to the sun,
Luxuriant and unbounded."—Thomson.

From the gloom cast over the community at large, and the agricultural interest in particular, in consequence of the prevalence of the present potato epidemic—it may be a relief to many of your readers to have a change of subject; and what can be more interesting than a few fresh and authenticated facts regarding the history of the modern improvements upon the immortal plough?

For a few years preceding the close of the last century, the farmers in the west of Scotland began to imbibe a spirit of improvement, and from the war prices then received, the fortunate farmers on leases of nineteen years, by prudence and economy, re not unfrequently made independent, d actually purchased the property they d in *tack* at the end of the lease.

The old Scotch plough at this period was believe the only one known or employed the west of Scotland. Farmers of intel-gence and capital soon began to perceive defects, and the most prominent were equently removed by the address and echanical ingenuity of the farmer and oughman.

Small's plough about this period was very pular in the Lothians, and its fame had read to the West; but its concave hollow ouldboard, and obtuse cutting irons were und eminently defective, and not at all lapted to the stiff cohesive soils of Lanark, yrshire, and the west of Scotland in gen-ral.

At this crisis Wilkie, in conjunction with is relative, Thomas Findlay, commenced series of improvements upon the plough, ased principally upon the form of the old cotch one.

They found the whole of Small's plough efective and ill adapted to the soils of the est. The construction itself was bad; the eam and left handle were in one straight ne, so that unless the ploughman heeled s plough over to the left it was impossible walk between the stilts; the furrow cut as very obtuse indeed, and seldom ap-oached a right angle. The mouldboard as much too hollow, and could not adapt elf to the twist requisite in turning over hesive soil, and strong sward where a ed furrow was required.

Findlay being possessed of operative skill ploughman, directed Wilkie, who was ually skilful as a practical mechanic, and their combined efforts a plough was oduced, which has gradually supplanted others, and may now be found in every rt of the cultivated world.

About 1810 or 1811, ploughs in imitation Wilkie's were made wholly, or nearly so, wrought iron, that is, the beam and ndles, for the working part being iron was identically the same, in both construction of plough.

Some parties have lately laid claim to the merit of being the first makers of iron ploughs in Scotland. This must be contradicted, as the individual who made the first iron plough in Lanarkshire, was the late William Allan, farmer, near Bellshill, parish of Bothwell. The plough he constructed is still in existence, and will be referred to in a subsequent letter. If agreeable to your intelligent readers the subject will be continued in your next.—*Agricultor.*

◆

EDUCATION OF FARMERS' SONS.

The observations made in your last number, upon the subject of the education of farmers' sons, brings forcibly to my recollection the following anecdote:—

Many years ago, whilst living in a village not very far from the town of C—, in which a very excellent charity school, upon a large scale, had been long established, I had for a neighbour a very industrious man, who farmed his 150 acres well. He had himself received a fair education, but was not fond of books; his four sons, therefore, had no example from their father of the enjoyment to be derived from literary recreations, nor did their father, to my astonishment appear aware of the necessity there was for his children to be taught.—Upon one occasion I expressed to him my surprise that he did not give his children at least the same advantages, in this respect, he had himself received in his youth. His reply was, that he *could not afford it; that if he sent his boys to school, he must hire others in their places;* and ended by contrasting the condition of his children, as to their schooling, with those of the labourers in the village, all of whom had their sons educated at the free-school in the town without any cost to them, except for clothing and maintenance. I quite believe my neighbour would hardly have spared his boys even to have procured for them a gratuitous education, for he "*must have hired* *others in their places.*" Poor man! he suffured some losses, and had some crosses, but he contrived to remain upon his farm, and he brought up his large family; the boys, however, got no education which would fit them for any situation beyond mere labourers.—I am, &c. *O.*

POTATO DISEASE.

You may perhaps be sick of the Potato disease, but it is notwithstanding a very serious matter. In performance of sundry duties, I have several times this season had occasion to travel over a considerable portion of the counties of Lancashire, Cheshire, and Yorkshire, both before the potato harvest and since; and wherever I have been, and at whatever time, I have had an eye to this disease, both as to its extent and as to the best mode of preserving the crop through the winter. Perhaps the fact I have collected may be of some little service to the public.

There are few fields, whether dry or wet, or whether the soil be sandy, mossy, clay or loam, but what the crop was less or more affected; generally, but not in every case, the wet soils the *most*—well drained clay and mossy soils the *least*—fields *well sheltered* from the *east*, by woods or hills, less than those in exposed situations—late planted crops more affected than the early ones, and late varieties more than the early. It is said the best varieties have suffered the most. Taking the above three counties, I do not think so. I have seen some of the best varieties more diseased than others in the same field; but the very worst diseased crops I have seen have been of the most watery sorts, or what we call cattle potatoes: in some cases nearly the whole rotten. I had myself five drills planted in the garden, each drill with a different variety, but planted on the same day, and with the same kind and quantity of manure. The best variety (Wellington Blues, new raised from seed), not one tainted potato; the worst variety (Lumpers), nearly all rotten; the other three sorts all less or more affected, but the best varieties the least.—On land newly broken up from *old grass*, the crops are less affected than on other description of land. But still, even on that description of land, I have only seen one field quite free from disease. This was a good soil, and the field well sheltered from both east, north, and west.

As to the extent of the damage, up to the time of taking up and pitting, I should say there is about *one-third* of the crop entirely lost. There is every likelihood of another *third* being lost in the pits. When they have been put together in narrow pits, and well picked before being put together, and not much soil put upon them at first, they are apparently keeping well, even those which were slightly affected. Where these precautions have not been taken, they are generally not keeping well; and, in many cases, the whole mass are rotting together. It is very evident to me, that all those potatoes which were sound when taken up, or if only slightly affected, would have kept if care had been taken to keep them *dry* and *cool*. Where this care has been taken, I know of no instance of a failure yet.

The disease is said to be *contagious*. I do not think so. I have seen, in numberless cases, diseased potatoes lying amongst sound ones, for a month this season, without the latter being the least tainted, when the *whole* have been kept *dry and cool*.—When the disease proceeds to *wet rottenness*, then sound potatoes will take damage by lying in contact with them. But this was always the case with rotten potatoes, ever since I knew this root. Within the last fifty years, when there was no disease, I have seen many pits of potatoes half rotten, from no other cause than having those which were touched with the frost mixed with the others, and pitted with them. In many cases I have seen other pits, within the same period, all rotten in a mass together, caused by over heating, and this caused by the potatoes being pitted in too broad and deep pits, and had too much soil heaped upon them immediately after being put together fresh taken up from the field. Twenty-six years ago, a friend of mine sold a cargo off the field, and they were put on board a vessel immediately on being taken up. They all rotted from over heating. I believe many cargoes have been lost this season from the same cause, farmers being anxious to get quit of them while sound. To conclude; I think there is little doubt but in these three counties a *full third of the crop will be saved.* If this should be the case over England, we shall be safe from famine in England; because there are very few who live entirely on potatoes, and there are great numbers who only take them once a day, and then not a full meal. When potatoes are plentiful and cheap, one-half or two-thirds of the crop is consumed with cattle, horses, and pigs. This is as it should be. No people ought to live entirely on potatoes. When this is the case, in any country, there will be periodical famines, as in Ireland. When there is no disease, no crop is so precarious, and they cannot be saved from plentiful seasons to supply the want in sarce ones. Potatoes are a cattle crop, and are useful for the people to fall back upon in seasons of a scarcity of corn, &c. In these seasons the cattle must fall back upon straw. There never yet was any profit in keeping any descriptions of stock upon straw, however it be cooked or cut; and, as a farmer intending to make profit, should never practice it, except in seasons of a scarcity of other food for man or beast.

In my next I shall perhaps give you my opinion as to the cause or causes, and as to a remedy or remedies, for the potato disease; but not presuming that my opinions are right, I am, respectfully, *W. Rothwell, Winwick. Nov.* 24, 1845.

P.S. There are reports of the turnip crops being diseased in the south of England and in Ireland. In inspecting these crops for the Manchester Agricultural Society, I have never seen them more healthy than this season. I have seen them heavier generally in the country, and yet there are a few weighty ones.—*W. R.*

◆

OUGHT POTATO PITS TO BE VENTILATED?

If the danger of losing seed had not been so great, and if some high authorities had not *confidently* answered this question in the affirmative, I would not have troubled you with its discussion.

I appeal to facts and experience. When seeds are buried below the reach of air, they do not germinate, yet they are *preserved* for years, and germinate when again brought by the plough within the reach of air. On a clayey field rape had been sown and the crop eat off. In the following years no rape plants appeared, till seven years after the rape crop, when it was *deep*-ploughed and fallowed. Then numerous rape plants sprung upon it. The seed had been buried so deep as to be preserved for seven years and yet grew when air reached it.

The "Mummy wheat" shews that wheat may be preserved *alive* for *thousands* of years, if air and moisture be excluded from it. I had part of a dry field (of old croft land) ploughed fourteen or more inches deep by three horses. I had never sown barley on it nor on any other field of the farm, and could answer for my oat seed being free from barley, nor have I any reason to believe that barley was sown there during the present century: yet many stalks of barley grew up after the deep-ploughing. These must have lain in the subsoil for at least half a century.

In the spring of 1840, red clover was buried too deep, and it did not appear till the second year of pasture, the *third* after it was sown.

The years 1826 and 1842 had extremely dry summers, and hence in 1827 and 1843 we had *great* crops of white clover, even in some places where clover had not been sown for at least 60 years, as the ground had grown a crop of timber. cut at about 58 years old. The long drought of these years had chopped and opened the ground so as to admit air which reached the buried seeds, made them germinate and give rise to the crops of next years.

It is well known that field thistles spring up innumerable in many fields after draining. The seeds of these must have lain for ages, unable to germinate for want of air.

I have covered some spots of peat with 4 to 6 inches of clayey till, taken from 4 feet below the soil. Annuals and dockens spring up in this. The seed must have been buried and preserved there from before the creation of man.

Potatoes have been buried 8 or 10 inches deep in a clayey soil, and the soil so compressed over them as to exclude air. They did not germinate till they were raised, several years after, in trenching the soil. Most gardeners have had opportunities of observing this fact. A volume of similar facts might be written, all showing that seeds can be preserved in a healthy state for *any* number of years in the mean temperature of this country (*i. e.* at 45° to 47°, or 50° Fah.), without germination, if *air* be excluded from them.

We are sometimes compelled to stack corn while too wet, from recent rains. In this case we ventilate the ricks, and, unless the weather is very cold and dry, thrash them as soon as possible. The corn and straw in this case were unnaturally wet; our object is to dry them, and their height as well porous texture aids us in this. But when very mild wet weather follows harvest, we are compelled to thrash them.

But even when stacks (especially of wheat) have no ventilators they admit so much moisture in wet weather that the grain is with difficulty brought to the market in a saleable state. The Mark-Lane weekly reports show this.

I shall now suppose potatoes raised and pitted in dry or fair weather. These are in their natural state as to dryness. A heap or pit is an unnatural accumulation; yet as this is unavoidable in practice, the question is how can this heap be best preserved till spring? Some would freely admit air to it; others seek to exclude air. I agree with the latter.

When potatoes are kept in houses partly under ground they have a moderate supply of air, and we often find that they have begun to grow in November and December, when the weather is mild. In the same seasons my potatoes had air excluded in pits, and did not begin to germinate till the season of planting. In the early part of May I have generally planted part of my crop. The sprouts were then little larger than pinheads. The sun's beams are never allowed to strike on my pits. They have a northern exposure, and by putting straw over them in the frosty season, they are kept pretty uniformly at 45° to 47° Fah.

I know not the exact temperature at which potatoes germinate. It must be between 50° or 54° Fah. Till germination begin, the potato, if alive, has very nearly the temperature of the earth around it, and *if all potatoes* in the heap were alive and sound the admission of air could do neither good nor ill, *while the temperature ranged below* that at which germination begins; but suppose that only *one* dead or decaying potato is in the heap, and mild air is admitted, the decaying tuber absorbs part of the oxygen of the air admitted, and in changing it to carbonic acid raises the temperature of the potatoes around it. These, in germinating, absorb more oxygen, and in turn heat those next them; so that in a very short time a considerable portion of a pit may (when air is freely admitted) be brought into a state of growth; and as the heat goes on increasing in the heap while oxygen is admitted, the temperature soon rises to a degree fatal to vegetable life, and putrefaction goes rapidly on. I have found the temperature of such a pit in May at 130° Fah. Now we are aware that, after the utmost attention, some diseased potatoes will this season be left in every heap. If we can keep air (or oxygen) from them, keep them dry, and at a steady low temperature, we preserve even the dead tubers from further decay, and thus preserve the living ones till seed time ; but admit air by ventilation or imperfect covering, and we can expect only that the decaying tubers will, by evolving heat as above stated, lead to the premature decay of the whole heap.

I have pitted the "sound" part of my potatoes, only I found that an imperial bushel of slaked lime powder is quite enough for a ton of potatoes, to cover the floor and every *single* layer of potatoes, and mix with the soil which covers them. The lime quickly kills or expels worms and insects, destroys any corrupting matter on the skins, forms a crust around them which takes up any carbonic acid as it is evolved, and, while air is excluded, may be expected to act as an antiseptic. I have elsewhere proved, both by observation end experiments, that, *when air is excluded*, lime, both in the solid state and in lime-water, is powerfully antiseptic. In July, 1840, I observed that the grass, on which a heap of slaked lime had stood for 26 months, retained its *green colour* and natural appearance when the lime was removed. This led to the experiments referred to, and which were continued for a year.

The extra trouble in selecting and pitting which I have recommended and practised costs only about one halfpenny per cwt. We cannot confidently affirm from experience that it will preserve the present crop, yet analogy strongly encourages the hope. We must, if possible, have *seed* in spring, and at present we are ignorant of any more likely way of preserving it.

Many farmers injure their potatoes by exposing their pits to the *winter sun*. Thus they are heated by day and starved at night. If I had no wall fronting the north, where I could pit in a *dry* situation, I would get a cartload or two of wooden hacks or " slabs," and with these erect a temporary wall to keep the sun from the pits. This in storing either potatoes or turnips would in spring be found good economy—*P. Garden, Glenæ, Dumfries, 4th Nov.* 1845.

◆

OBSERVATIONS ON LABOUR AND LABOURERS IN THE WEST INDIES.

(Continued from page 305.)

It would be tedious and out of place in a communication of this kind to enter minutely into the effects of the peculiarities of climate alluded to: it may suffice to mention a few of the more prominent.

The high temperature always prevailing and commonly accompanied with great humidity of atmosphere, is exceedingly unfavourable to the durability of articles that are not exempt from decay from their nature. Steel and iron rapidly rust here ; leather becomes covered with mildew ; flannel and woollen articles are devoured by moths and other insects ; books and pictures have as many enemies. These are checks to improvement. Then, there is unusual insecurity of life. Without warning, most unexpectedly, a malignant fever may burst out, and more than decimate the population. Not many years ago, it is said, and perhaps the usage still prevails, the substantial inhabitants of Demerara did not provide themselves with a new article of raiment, however much needed, till the sickly season was past, so insecure were they of life and of surviving that season. Moreover this island (Barbadoes) is subject to destructive hurricanes, in common with others, which in a few hours may devastate the whole extent of its surface, sweeping away not only crops, but even houses and churches. Another island, is subject to earthquakes hardly less destructive in their effects ;—a third to volcanic eruption ; and all of them are subject, more or less to drought and heavy rains,—the one burning up vegetation and rendering subsistance difficult, the other washing away the best part of the soil, and the best part of the manure.

As regards domestic life, to touch very briefly on that, the climate seems more favourable to lust than to love. Here there is no fire-side comfort, and I should suppose no bed-comforts in the marriage state. Woman here soon loses her beauty, and man long retains his passions. The consequences require no comment. Facilities of every kind are afforded to vice, where for a long while amongst the lower class chastity was hardly considered a virtue, and where rum can be purchased cheaper than food. I remember once hearing an English clergyman say, he could not refrain from shedding tears, after going through the main street of Chatham : he would be subjected to severe affliction of the like kind, were he here, in his evening drive, in passing by the public road from the principal town, to and through the Garrison of St. Ann's.

At present, great exertions are making to increase the number of labourers in these colonies,—Barbadoes almost alone excepted, where there is already rather an excess of population. In British Guiana, the planters are bringing Hindoos from distant Asia, in some of the islands they are importing Scotchmen and Welshmen as labourers ;—in both instances of course with a view to their own advantage and emolument. A more important consideration is, whether such removal with their families to a tropical climate is likely to be for their advantage and permanent good. I fear, if all the circumstances are taken into account, as they ought to be, the answer will be in the negative, especially as regards their permanent welfare.

There are two evils most to be apprehended. The first is that the white labourers imported will prove victims to the diseases of the climate, and that in most of the colonies the race will die out in a comparatively short space of time, unless kept up by fresh importations, and a great sacrifice of life. In the army it has been wisely and humanely ordered that the period of service in the West Indies, formerly of ten years, should be limited to three. On the long period, it was found, that few of the men composing regiments on quitting England, were to be found in them on their return,—the majority of them having either died, or having been previously sent home invalided.

The second evil to be dreaded is, that should the climate like that of Barbadoes, not prove so destructive to them as to occasion their extinction in two or three generations, they will become a demoralized and degenerate people, such as the low white Barbadians are at present.

The interested proprietary planter may say, these are apprehensions which we do not entertain. We believe that with ordinary care, the health of the white labourers may be preserved here, and life prolonged to, or beyond the average at home ;—and that by attention to the morals of the people and to their instruction on the part of the clergy; and by attention to the education of their children in schools under the superintendence of the clergy, the demoralization of the labourers themselves may be prevented, and their offspring be brought up not inferior in moral and religious training to the children of the same class in Great Britain.

These are agreeable hopes to indulge in ;—but it seems to me they are hopes hardly consistent with reason or warranted by experience. But the future must decide. Should the result of the trial now making be prosperous, it will be very delightful and most important. Should it fail, it will be matter for another distressing page in the sad history of these colonies. Be this as it may, it would be well before families of labourers leave their native homes, that they were informed not only of the immediate advantages offered to them, and which they may possess for a time, but of the various risks which they run, and that in attempting to better their condition, they may render it infinitely worse ; and not only their own condition, but that of their children, and their children's children, should the race be so far prolonged.

In the migration of people, as in the removal of plants and animals, attention should be paid to the laws of nature. Each zone has its peculiar plants and animals ; and there are peculiarities in each of the races of human beings that inhabit them. Where the palm flourishes, the oak perishes ;—where the pine apple grows luxuriantly in the common soil and the open air, the currant, the gooseberry, the apple tree cannot even be kept alive. Animals have indeed greater power of adaptation than vegetables, and man, of all animals, most so. Notwithstanding, man even is not altogether an exception;—taking an extreme case, the white race, dies out,—becomes extinct, and that in a few years on the western coast of Africa;—and the coloured inhabitants of that coast almost as rapidly perish in the northern countries of Europe;—the white race in Africa from the effects of malaria, from which the natives are exempt; the black races in the climates of the north from pulmonary consumption, and other diseases of the respiratory organs, With care like an exotic, the European may be kept alive even on the Gold Coast; and with care the African may be kept alive in Britain;—but in neither without care, and even with care not without great risk. The same remarks, modified in degree, are applicable to the British labourer removed to the West Indies: more care is required there to be taken of health than most labourers will be inclined to give, or were they so inclined would be able to pay.

Hard labour under European task-masters destroyed the aborigines of these islands:—this should be a warning. Humanity, with mistaken views, to save one race, subjected another to slavery. As slaves, worked hard, leading a demoralized life, even Africans died here in so large a proportion that constant importation was necessary to preserve the stock of labourers. Now, the evil of slavery is abolished, the proportion of births is found to be greater than that of the deaths, proving that the climate is not unfavourable to the health and prolonged life of the African. Is not this, then, the race which should constitute the permanent inhabitants of these regions; and should not our best efforts be exerted to improve them, physically, morally, and intellectually.

This is the confine of a subject of great extent and importance, and I will here stop. I have written more than I intended, led on from topic to topic. I began with the remark, that I hoped what I had to state would at least tend to make the ploughman and field labourer more contented with their lot at home; and I will end with this addition, that I shall not consider myself as having written these remarks in vain, if they should have the effect of making a single labourer invited to migrate to the West Indies, pause and reflect, whether the promised advantages of change are not more than counterbalanced by the uncertainty attending them, —the risk of health,—the risk of life,—the risk of debasement.—*D., Barbadoes, Sept.* 9, 1845.

COLTSFOOT.

As the question, as to the nature of coltsfoot, and the means of keeping it under, has been discussed in the *Herald*, I may state my opinion and practice.

Coltsfoot increases by root and seed: no tillage will destroy the root except it be brought to the surface by scarifying in dry weather, nor prevent it seeding when in bloom unless covered by the plough. If the bloom is cut off and left on the ground it will produce seed in a few days; or if the bloom is gathered and laid in a heap, even under cover on a dry floor, it will become as white as a fleece of wool: hence it is evident that the only mode of preventing its increase by seed is to gather the bloom and burn or bury and rot it.

March is the proper season to go over the land to gather the first heads: from three to five blossoms grow on each stem commonly. A short narrow hoe is the best tool to cut off the heads—a bag apron the best to stow and carry the heads in. The land should be gone over again in a week or two to gather the second heads, and a third time if seeded heads appear above the clover or other seeds, &c. Each head gathered when seeded should be deposited in the bag separately, lest by filling the hand much seed is scattered.—*Charles Poppy, Witnesham, Ipswich, November 17th,* 1845.

AGRICULTURAL QUERY.

Would either you or some one of your correspondents tell me what is best to mix with Human Fæces? I am about to collect

ALL the contents of the privy into a reservoir. What should I mix with it to fix all its valuable properties, to make it most available for agricultural purposes? Is Gypsum sufficient?—*A Constant Reader.*

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INDIAN CORN.

You will oblige me if you can give me any information as to whether *Indian Corn* has been grown in Lancashire or Cheshire, with any degree of success.—*Robt. Roskell.* Indian Corn requires a rich, light, and dry soil, none of which requisites do the Lancashire or Cheshire possess, in a general way; in addition to which, without a very much more dry, certain, and warmer climate than that of the counties named, the growth of Indian Corn cannot be attended with success. We have seen it grow well, and the cobs form, but they did not ripen, nor was the grain firm or sweet.—*E. F. H.*

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CHEMICAL AGRICULTURE.

OF all the subjects which, at the present period, occupy the attention of the scientific world, there is none perhaps so practically important to mankind as that department of chemical knowledge which has for its object the improvement of the productive qualities of the soil, and the increase of the amount of the edible produce of the land. Surely a greater patriot or philanthropist there cannot be than that man who, after years of toil and dangerous experiment, brings all his literary powers to bear on a question so vitally important; and he who is able by his scientific researches to make an acre of land produce one quarter of wheat more than had been gained before, ought rather to be lauded for his merit than despised as an underminer of old established customs. Let us make a direct appeal to the judgment and common sense which every agriculturist of England must possess, whether custom can always be relied on; if so, why do they so *assiduously* read those publications which profess to describe the greatest improvements of the day? why do they so eagerly snatch at suggestions for the amendment of their implements of tillage? The answer is uniformly the same—"We may improve the works which we have made, but we must not interfere with the operations of nature." If a man is sick, does he not send for the physician, or does he passively yield up the dictates of his mind and give way under the adverse results of natural causes? This is not the case; every faculty is strained, and every energy exerted to renovate the system, to supply the deficiencies of nature, and to restore the body, which is the garden of the mind, to its pristine vigour and beauty. This is the case with the diseased body, and equally applicable to the diseased soil. Sow wheat on the same land for many consecutive years, and every farmer knows the result. The land at first yields plenteously, but gradually the crop falls off;—the soil actually becomes sick, and incapacitated to the ingredients necessary to the nutrition of the wheat. The farmer perceiving this, abandons the idea of sowing more wheat, so removes his seed to fresh land, where he may get an adequate return for his labour and his pecuniary outlay.

Were the farmer as well acquainted with the abnormal changes which take place in the economy of soil, as he is with the general routine of husbandry, how much labour and how much money would be saved for the comforts of his household, which are now expended in the support of his ignorance or his indolence! For in the present state of our knowledge, we know full well the reason why such and such things take place; we know for instance, that wheat will not grow for consecutive years in the same soil, because the stimulus to solution of those portions or ingredients of the soil which are absolutely expedient to its growth, is deficient, or because there is a real paucity of such substances in the soil itself. In either case, or in both combined, Chemistry comes directly to our aid. We apply manure, and thus supply at random the necessaries to the crop. We use electricity, and administer, in uncertainty, stimulus to the growth of the wheat. Now it is the part of agricultural and organic chemistry to substitute definite design in manuring for random fertilizing, and to replace uncertain stimulus by effectual promotion of growth. We propose now to consider briefly the different properties of the chemical manures now in use, as evincing the superiority over common farm yard dung, to which the agriculturists of England appear inseparably united by the bonds of custom of long-established experience.

Of all the varieties of guano imported into this country, there is none perhaps superior, reasoning from analogy, than that lately brought from the Patagonian coast. Its richness in ammonia presents the highest claims of the agriculturist's attention. I am informed by Mr. J. W. Hopkins, agricultural chemist, of Manchester, who has devoted great time and labour to the study of the fertilizing properties of substances in general, that the ammonia is in large masses, and especially adapted for the promotion of vegetable growth, on account of its great solubility. Guano is well adapted for the growth of certain plants, but must not be considered as a universal fertilizer, for though it abounds in animal matters and ammonia, it nevertheless is deficient in the principal salts, which are equally necessary for the production of a flourishing crop. Guano is not adapted for potatoes, turnips, mangel-wurzel, &c. No manure can be perfect, unless it contain every ingredient that plants may require; nor is it absolutely necessary that such ingredients be mixed in the exact proportion in which they are found on analyses of such plants; for plants are endowed with a peculiar vegetable instinct, which enables them, by the spongioles of their radicles, and by means of an intricate process of endosmose and exosmose, to absorb into their system such principles as may contribute to their growth, and to excrete and reject those which would have a contrary tendency.—Numerous attempts have been made so to combine vegetable essentials, if I may be allowed the term, as to form a chemical composition adapted to the adequate supply of the deficiencies of soils, but in the majority of cases such attempts have proved failures; for, in the first place, they have been palmed upon the agricultural world at such low prices that no chemical ingredient of any value could possibly have entered in any quantity into the composition; and in the second place, the principal ingredient has been of such an evanescent character, that on a trifling exposure to the influence of the atmosphere, they have been altogether deprived of any fertilizing power which they might possess. I belleve the Pinguedo to be a compost the *most exempt* from what has just been stated, for I have seen its virtues tried, and know by analyses, that its intrinsic value nearly equals its price. I know that it contains a large per centage of fixed ammonia, which I disengaged by adding quick lime, and then pouring water on the mixture. It contains also a good dose of carbonic acid, which I have set free by adding a few drops of sulphuric acid. It contains salts of potash, soda and magnesia, phosphates of potash and soda, and several other ingredients indispensable to the growth of plants of all descriptions. To return to the object of this paper. I would urge all those who call themselves agriculturists to penetrate, by observation and research, into the mysteries of nature, not with the idea of diving into obscurities of metaphysical questions, but in order to obtain clear views in tracing natural results to natural causes; for we are assured that agiculture, conducted on scientific principles, will not only be more sure in its results, but more economical in its details. That farmer who knows and properly understands the application of chemistry to the improvement of the soil, will gain credit as a man of science, and save money by the purchase of such articles as can be turned to the best use. Thus the unscientific farmer now might mix lime and guano, (which I know now to be done) whereas the chemical agriculturist well knows that he would lose, in the ammonia set free, what he had hoped to gain. I have little doubt that from the rapid strides by which chemical knowledge is gaining upon the darkness of old established custom—I have little doubt, I would repeat—that at no very long period from the present, England will see the sons of her soil sowing and reaping under the guidance of those immutable laws which have ever been found to preside over all natural operations.—*G. M. Burton, Manchester.*

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ON DRAINING AND DRAIN TILES.

We are indebted to the *Gardeners' Chronicle* for the following on "*Draining and Drain Tiles*"—which, whilst landowners are suspending their draining operations till some means shall be offered them (by legislative enactment or otherwise), by which they may, to use the words of Lord Ducie, "*Grasp an estate and Drain it on the lowest terms*"—has a peculiar interest—we therefore transfer it to our columns entire:

It is curious to notice the changes that are constantly taking place in the advice and practice of our most eminent men who have written or lectured on what is now the fashion to call thorough-draining, but which has been known many years ago in some localities in Worcestershire by the name of furrow-draining.

We first began under this system to put in the drains just out of the reach of the plough, the poaching of horses, or the sinking of wheels, that the water might reach them the quicker, and have a better fall; since that time we have been gradually descending into the earth, and if we continue to go on "deeper and deeper still," we shall soon, like the railway schemes, come to an amalgamation with our neighbour Mr. Elkington. Indeed, I have lately, in the public *prints*, seen advice given to *bore* in the bottom of our drains; from this we may be led to expect, that in a short time it will become all "one concern."

Again, we were advised to put over our drains, which were to be large and capacious. whether made of tile, stone, or other material, so many inches of broken stones, thorns, straw, or stubble, to allow the water an easy passage to the drain; the raw subsoil, especially if it were clay, was to be carefully excluded in filling up, and none but the active soil used to cover the drain.

Following this advice, many thousand pounds have been uselessly thrown away, and the drainage in numberless instances is very imperfect. One gentleman, whose writings and opinions on agricultural subjects has done good service to the cause has honourably and candidly told us that he expended some hundreds of pounds more on a small estate in draining than was necessary, but then he was trying a mode perfectly original, by putting the broken stones underneath, and the drain tile on the top.

Our latest advice is to put in (four feet deep), in any soil, the smallest tile we can get, with an aperture of one inch in diameter, or rather less than a copper halfpenny, the subsoil is then to be put in, and if clay, so much the better, and the firmer it is rammed in and made solid, the more perfect will be the drainage. Here, then, we have extreme the very reverse of each other, and each in their turn have had their advocates, who would have felt displeased to have their judgments doubted; that this is the case at the present day in regard to nearly all the operations of agriculture, most of the publications on the subject will show, and none more so than the Journals of the Royal Agricultural Society.

It may, then, become a question with the young farmer or commercial gentleman who is anxious to embark his capital in scientific farming and anticipate reaping golden harvests by adopting the best principles, which of these systems really is the best, and most likely to insure a safe return for the amount of capital employed. On this question experience tells us,—do not implicitly believe or follow extremes on either side, but judge for yourself by trying their systems on a small scale, and remember, side by side, on the different kinds of soil in your occupation, and do not despise the practice of the neighbourhood until you have *proved* it erroneous. It is too much the fashion for experimenters and writers on agriculture to give their opinions as though one system would suit all soils and situations; a greater mistake cannot be made; what would suit in one would be worthless in another, and *vice versa;* this applies not only to draining, but also to implements, and everything connected with the cultivation of the soil.

As regards putting in tiles 4 feet deep for surface drainage, if it does answer well in some instances, it is no proof that it would succeed in all. In some situations it would be impossible to get proper outfalls for that depth, and in others the expence would be very considerable. Now, we should commence our drainage with good outfalls, that the water from the mains may have a fall or drop of two or three inches into them, and go off briskly; if dead levels are brought up to the mouths of the mains, the water moves off sluggishly, and then unless constant care is taken to keep the watercourses scoured out, it will soon grow up with grass and weeds, and the drains will be stopped up and forgotten.

The evils of deep draining with dead levels I know to my cost. An estate which I am now occupying was drained more than 20 years since (before it came into my occupation) on Elkington's principle, at an immense expence; the drains were put in from 4 to 8 or 10 feet deep; in one or two instances springs were tapped by them, but in many others no water flowed, except what was brought into them by deep boring; for it was, perhaps, thought necessary for the satisfaction of the employer that some water should flow out of the mains, or the work would have been stopped. But the question arises, would that water which was bored for have reached or injured the surface? I think not; for the estate has required to be surface-drained, none of the former drains having taken off the surface water, and many are stopped up, and unknown, except to the persons who executed the work. Had those drains been put in 3 feet deep, a good fall would have been obtained, and they would have drained the surface in addition to a spring or two.

If 3 feet of dry and porous soil and subsoil can be obtained by draining, that depth (and in some soils less may possibly do), we may be perfectly satisfied, is sufficient for any of our crops; therefore there appears no necessity for going deeper, except for the purpose of draining the pocket. I have some objections to make to the indiscriminate use of inch-pipe tiles, although I am quite ready to admit they have aperture sufficient to carry off the rain water from a certain amount of surface, which has been most satisfactorily proved by Mr. Parkes, consulting engineer to the Royal Agricultural Society, in his very able and scientific essay "On the Quantity of Rain Water, and its Discharge by Drains"—Society's Journal, vol. v. page 146; but having admitted this, the proper use of them, I shall now speak of the abuse of them. I know that many persons are now ordering inch-pipe tiles, only for draining the land, and consider any other sizes unnecessary, without taking note of the nature of the soil, the length *of the drains,* or *the* carelessness and ignorance of the workmen who may have to lay them. I have been using some quantity of tube or pipe-tiles for the last nine years (see an article "On Draining" in *Bell's Weekly Messenger*, May 23, 1836, signed R. S.); the sizes I have used varying from 2 to 2½ inches in the bore, and with these I have found it necessary to be extremely cautious and particular with the workmen to get perfect drains laid; what caution, then, will it require to lay the drains with 1-inch pipes; the least sinking, displacement, or carelessness, may cause the end of one tile to vary half an inch from the end of the next tile; this is but a trifle, but it is sufficient to stop the whole of the drains above; and supposing the drains 4 feet deep, how difficult will it be to find the stoppage. A number of failures will be likely to arise from the cause above stated; but it may be answered, that it can be prevented by inserting each end of the tiles into a larger one of an inch or more in length, thus forming a ring or union round the joinings: granted; but in that case the tiles will only have bearings at each end, on the rings, and if the soil or filling in bear very heavy on these thin, weak pides, they are very liable to break through the middle, and thus get stopped.

Again, if it was not the intention of the inventor of these small pipe-tiles (Mr. John Read, Regent Circus, Piccadilly) that these tiles were to be used alone. His object was to produce a cheaper tile, by being able to burn these pipes within the 2 or 2½-inch tubes; therefore requiring very little additional fuel, and also reducing the cost of carriage, as a larger number could be conveyed by the same means; but, at the same time, he intended to use the smallest pipes at the upper end of the fall, and to add other sizes (telescope fashion) as the drain increased in length, and required a larger aperture for the accumulated stream to flow off quickly. Using these small tiles under the superintendence of practical and scientific persons, such as Mr. Parkes or Mr. Read, will be found very different from putting them into the hands of persons of little experience in draining, and the failure must, as a consequence, be many.

From what has been stated, I infer that pipe-tiles of a larger interior diameter, say 2 or 2½ inches, are more safe for general use, and not so liable to form imperfect drains as smaller ones, and should springs be met with, they become absolutely necessary.

I have another reason to urge in favour of larger tiles which has not yet, that I am aware of, been tested by scientific drainers, so as to determine if it has any value or not. This is, to admit a freer circulation of atmospheric air through the drains, and may be called subsoil ventilation. To produce the best effects from this system, I would recommend it to be done as follows:—Put 2 or 2½-inch tubes in the parallel, or the frequent drains; then put at the top of the field, or fall, a cross-drain of the same size, communicating with each of the other drains continue each end of this cross-drain to the ditch, bank, or hedge, out of the way of cultivation, leaving a hole or shaft open to be filled with pebble-stones, or some rubbish that would leave free admission for the air to circulate through; or iron grates might be fixed over the openings. This, then, would form an air-drain, which would convey a supply to all the other drains.

Now, it is well known that a tube of any length will allow its contents to flow much faster if the upper end is open, than if it is partially closed; and there are soils, under certain circumstances, that run so closely together on the surface as to prevent for a time the admission of air; therefore, the water in the subsoil and drains must be held in suspension until the surface becomes cracked by atmospheric changes, or is broken by agricultural operations.

Mr. Parkes, in his essay before quoted, truly observes that, "One of the most beneficial effects of drainage may be also safely presumed to arise from its facilitating the access and change of air to the very bottom of the bed; as, in proportion to the escape of water, so will be the entrance of air which will, *pari passu*, occupy the place vacated by the water."

If, then, the air is an agent so beneficial in pulverising and rendering the earth accessible to, and fit for the reception of other fertilising agents, why should we not admit it into the bottom of the bed, and make the drains answer a two-fold purpose, so that the drying and shrinking of the subsoil (whereby cracks and fissures are caused) may be accelerated, for, in many instances, it has been found that no beneficial change has taken place in land newly-drained for the first 12 months, but afterwards the good effect began to show itself: nor is it surprising; for, in some seasons, when neither heat nor cold, the natural agents of pulverisation, prevailed in the extreme, this miniature conduit, 3 or 4 feet deep in the earth, firmly covered up from the reach of atmospheric influences, could not be expected to cause a very rapid change in that large mass of earth.

After all I have said in favour of larger drain-tiles and subsoil ventilation, I shall again repeat my advice—"Try the system, side by side with the other, on a small scale." This can be done at a very trifling expense where draining is *being* executed. For instance, select 10 or 12 *furrows*, where the outlets can empty into a ditch; that the mouths of the drains may be open, place in the two first drains, 1 yard in depth, pipes of 2 or 2½-inch bore, then put in the next two drains 1-inch pipes, the same depth, and so on alternately. The larger drains should be carried at the upper end 1 or 2 feet longer than the others, that the cross or air-drain may communicate with the larger ones only; the cross-drain to be made as before directed. The emptying of all those drains are then to be carefully marked in heavy rains and stormy weather as to the beginning, duration, and quantity discharged from each; at the end of the first year a trench, 2 feet wide, should be cut across (at right angles) the middle of the drainage down to the tiles; in cutting this opening it must be observed what alteration has taken place in the subsoil between the larger or smaller drains. If the combined results are in favour of the 1-inch pipes, do not hesitate to adopt them, with care, as the cheapest. If, in favour of the larger ones, with ventilation, use no others, as cheapness is not always economy.—*Richard Smith, Worcestershire.*

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Professor Liebig's Opinions on the Potato Disease.—Giessen, Nov. 5.—The researches I have undertaken upon the sound and diseased potatoes of the present year have disclosed to me the remarkable fact that they contain in the sap a considerable quantity of vegetable casein (cheese,) precipitable by acids. This constituent I did not observe in my previous researches. It would thus appear that, from the influence of the weather, or generally speaking, from atmospheric causes, a part of the vegetable albumen which prevails in the potato has become converted into vegetable casein. The great instability of this last substance is well known, hence the facility with which the potato containing it undergoes putrefaction. Any injury to health from the use of these potatoes is out of the question, and nowhere in Germany has such an effect been observed. In the diseased potato no *solanin* can be discovered. It may be of some use to call attention to the fact that diseased potatoes may easily, and at little expense be kept for a length of time, and afterwards employed in various ways, by cutting them into slices, of about a quarter of an inch thick, and immersing them in water, containing from two to three per cent. of sulphuric acid. After twenty-four or thirty-six hours, the acid liquor may be drawn off, and all remains of it washed away by steeping in successive portions of fresh water. Treated in this er, the potatoes are easily dried.

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NCASHIRE, CHESHIRE, AND TH WALES DRAINAGE AND INCLOSURE COMPANY.

really refreshing, after the bubbling ment of the last eight months, to f the formation of a company brought rd under the above title, and under uspices of noblemen and gentlemen highest standing in the country as cal agriculturists and capitalists: like sis in the desert—a green spot amidst ide waste of reckless speculation—the lights to rest upon a project which its intrinsic value and honesty of se upon the face of it. We copy the ing from the *Chester Courant* of the lt.:—

> our last number we endeavoured to shew e employment of capital in agricultural ements would not only tend to develope sources, of which the country has not at t the advantage, but that such an appli- of money would in a merely pecuniary rove a most profitable investment. We herefore much pleasure in informing our , that a preliminary meeting was held at oyal Hotel, in this city, on Wednesday, l of December, for the purpose of giving ditional impulse to agricultural enter- by establishing a Land Draining and sure Company for Lancashire, Cheshire, orth Wales. The difficulty of individual n, not only from the great expense of g operations as at present conducted, but om the want of competent skill in ap- , and facilities for obtaining, the neces- aterials on the best terms, has long been The advantages, therefore, of a general tion, under proper surveys, with power y out the requisite improvements on uni- and approved principles, have occurred y persons of intelligence and experience ning matters, as deserving of adoption: e proposed Company has already re- the sanction of many noblemen and men of local influence. It has been de- ated, that a most important saving can ected by the manufacture of Draining which now bear an enormous profit; y the employment of engineering ability first eminence, the operations of drain- y be carried on in a more complete and tory manner than is often the case with works of that nature. By advancing loans too for the purpose of promoting improvements, on security of the estates, to remain on mortgage, or to be repaid by instalments as the borrower may think fit, facilities might be afforded, which do not at present exist, to those landowners, who might not find it convenient to make instant payment to the Company for services rendered, and who have hitherto been deterred by the fear of incurring a great outlay from improving their property. Another important part of the proposed Company's objects will consist in the reclamation and improvement of waste lands which are now sterile and neglected. We hope, however, soon to be in a position to go more into detail; and in the meantime we shall be happy to furnish our friends, who are desirous of knowing more about the matter, with what information is within our knowledge."

This announcement has been followed up by the issuing of a prospectus which we have seen, and which we hope to present to our readers in our next. In the meantime we can assure them that it contains no astounding figurative demonstration to delude the unwary—no fictitious bombast to suit the tricksters of Capel Court. It is not said that this project will convey every body everywhere in no time, and at *almost* no expense, and yet afford an *enormous return* to the shareholders; but it invites those who have capital to invest, and who seek for it a safe and *sufficiently* remunerative investment, to advance their money upon the assurance that it is usefully employed, and upon the security of the land, which it will in many cases double, and in some quadruple in productive capability.

There is a vast amount of accumulating capital in this country, for which its owners seek employment—sometimes in the form of loans to foreign governments—sometimes in the more useful projects of railroads and canals both at home and abroad; now, in the purchase of wild lands in Canada or Australia, and then in the cultivation of the tea plant in a distant province of our Indian empire. In reflecting upon the various channels which our enterprising fellow-countrymen have opened up for the employment of their enterprise, skill, and capital in all parts of the known world, it has often struck us with surprise that hitherto, no systematic application of joint stock capital has been made to the improvement and reclamation of the soils of these islands. Why send money to purchase and bring into cultivation land in the Back Woods of Canada, when there are thousands upon thousands of acres at home which are in need of the same application, and which will amply repay the outlay. Good cultivatable lands, in various parts of the kingdom, which, for want of the capital necessary to reclaim them, are now let as sheep walk at three shillings per acre per annum, bought at 25 years purchase, and reclaimed at an expense of about £10 per acre, would be more than quadrupled in value, and might be sold for 12s. an acre at thirty years purchase which would realize a profit of 30 per cent upon the outlay. Cold retentive soils in Cheshire, which formerly yielded on an average not more than 15 to 20 bushels of wheat per acre upon an outlay of £4 to £5 per acre in draining, produced last year 35, 37, and as much as 40 bushels of wheat per acre. Is there then, in the prosecution of designs such as these, any inducement to the British capitalist? Can he do better than employ his money at home under his own immediate inspection and management, and for which he has the security of the land he improves? How is it likely to be with him, if his money is gone, to form part of a Spanish or Pensylvanian loan, to construct a French railway, or carve out settlements in the impenetrable forests of Canada? or will he be better off with his shares in the Assam tea company, or in five hundred out of the seven hundred deposited railway schemes of the coming session: let those who are blest with such property answer. It is not because we are ardent advocates of the agricultural improvement that we urge this matter upon our readers, but because we honestly believe we are calling their attention to a project which has within it all the elements of abundant pecuniary profit; and, which it is capable of demonstrative proof, will prove at once a safe and eligible investment. What lender of money will be content to make his advances upon mortgages at four per cent. when in the shares of this company he will have identically the same security, with this provision, that the mortgages of the company will, by a clause in their act of parliament, override all other mortgages, as well as settlements, affecting the lands improved.

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STALL-FEEDING CATTLE.

In your number for November, I notice an article on stall-feeding cattle, by Mr. Rothwell. He points out the advantages and disadvantages which, he considers, must necessarily attend such a system, when carried out to its full extent. I shall not, I think, be deemed by him incorrect, if I class the disadvantages under two heads, namely, the extra labour and expense attending the frequent mowings necessary for the daily supply of fodder, and the damage to the land from the carting. With a view to obviate these objections, allow me to refer to a proposition made by Mr Prideaux, in the *Exeter Flying Post*, and copied into the *Gardeners' Chronicle* and *Agricultural Gazette*, of 20th July. After mentioning that it was a practice in Germany to cure fresh cut grass by packing it in pits, with 1lb. salt to the cwt. and that grass, thus treated, went much further in food than the same quantity of grass made into hay, he proposes, as more preferable, both in convenience and economy, that the green grass or clover be stacked in layers, with straw or old dry hay, the salt being sprinkled on each green layer. He thinks that not only the grass, but the straw also would be improved, in consequence of the "salt juice absorbed gradually softening and rendering it soluble and digestible." Now, if such a method as this were tried, and found to answer, how applicable would it be to the system of stall-feeding, especially in the case of milking cows! Instead of going into the field twice a day, you might in one day bring in sufficient for a month's supply. It is my intention to put the thing to the test, when an opportunity offers.

Mr. Rothwell, says, "It is quite clear that the extra quantity of manure made by soiling is required by the land: of course no profit arises from that." But will not the land derive more benefit from the regular distribution of manure from the yard, than it would from the droppings of cattle in the field?

With regard to the advantages of stall-feeding, all will agree with Mr. R., that "finding more labour for the working classes, and raising more food for man, from the same extent of land, are indeed important considerations."—*Thomas Randell, Bradley, Feckenham, Dec. 17th,* 1845.

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CHEMICAL TERMS.

I HAVE received the *Herald* for January last. It is to be regretted, that, in a publication which might be made the medium of conveying useful practical information to a class of persons, who stand in need of having old prejudices removed, scientific terms are not avoided, and plain English made use of, which would be intelligible to the common tenantry, for whose enlightment I presume the *Herald* is intended. I believe the great majority, even of the higher or richer class, do not comprehend the meaning of half that is written, especially on the subject of agricultural chemistry—valuable as no doubt it would be if put forward in language divested of technical terms. Perhaps, as it appears to be the fashion of the day, to make use of unintelligible words, a glossary would be an useful appendage to the *Herald*. In communicating the general result of experiments, useful as it may be and is, and as far as it goes, it falls short of its maximum benefit unless every expence attending it be made known. I am rather doubtful of the good that is derived from isolated experiments on a rood or two of ground; because it is impossible to estimate the expense that would be attendant on an entire farm; without which, in my opinion, all experiments are valueless—that is, unless we can form an opinion as to whether the return of any particular mode of management will reimburse for the cost of procuring it.—*J. H. W., Leighland, Van Dieman's Land, May* 25, 1845.

[We are quite of our correspondent's opinion, that to render our paper as fully useful as it is our highest ambition to make it. technicalities should, as far as possible, be avoided, and to this our attention has been for some time turned. As, however, chemical subjects cannot be treated of without the use of the terms appropriate to that science, we propose to continue during the present vol., the glossarial papers, which we have already commenced, explanatory of the words and phrases more commonly occurring in chemical demonstrations. Our correspondent must be aware that for many of the chemical terms there is no definition, without recurring to some one of the dead languages, chiefly Greek, from which they are for the most part derived. For our own part, we rather approve the professional terms made use of in each particular branch of science; they are easy of acquirement, and when once known are equally useful in all languages. We have often regretted that amongst farmers somewhat of the same system does not exist, for we are frequently puzzled with the terms made use of to express the several farm operations, in different parts of the United Kingdom, arising no doubt from the various provincial dialects; but which, with a really scientific nomenclature, would be as well understood in Cornwall as in Cumberland,—it is with this view, that the Royal Agricultural Society of England has insisted upon the use in essays written for the Society's premiums, of all the proper botanical, chemical, and other scientific terms, accompanied with, at the writer's pleasure, the names and phrases common in the part of the country from which he writes.

With reference to our correspondent's objection to the results of limited experiments, as not indicating truly the probable returns from extended operations we cannot agree with our correspondent; that which is good for one rood or one acre, must (all conditions of the operations being the same), be good for five, 50, or 500 acres. Of course, if one acre of land be properly and well cultivated, and used for an experiment, the same results from a whole farm will not follow, unless every acre of that farm be of the same description of soil, similarly situated as to aspect, and equally well cultivated; when this is the case, certainly the same results will naturally be expected. Of course, all operations of agriculture are subject to the seasons, and for these, in estimating comparative returns, due allowance must be made.—*Ed. F. H.*]

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AGRICULTURAL QUERY.

I AM possessed of some land near the sea coast, the depth of soil upon part of which does not exceed two to three inches, with a subsoil of rammel, and in places marl. The present tenant, says, it is incapable of improvement; some years ago he ploughed and manured with fresh horse-dung, for wheat, which produced eight bushels per acre, since which time it has been in grass, but so miserably poor and bald in spots, that it seems impossible any stock can subsist upon it. As I am about to take the farm into my own hands, would you or any of your practical readers, kindly favour me with their opinions as to the best method of improving this land?—*W. M.*

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THE DAMAGE OF POTATOES,

ITS CAUSE AND REMEDY.

I SHALL now give my opinion as to the cause of the *extensive* damage done to the potatoe crop *this season* over that of other seasons lately, and also my remedy for the evident *constitutional* defect in the potatoe; but, as I said in my last, not presuming that I am certain of being right.

Potatoes have been diseased less or more, in various ways, every year since about the year 1830. The *excess* of disease in *some years* over that of others has been no doubt caused by atmospheric influences. All plants, and even animals, which are subject to disease are *more* and *sooner affected* when the *weather*, and other circumstances, are *against* them than at other times. This will account for greater damage to this crop in some seasons than in others since the above period. The analogy between plants and animals is very near. Sudden changes in temperature, or in moisture and dryness, have a great effect upon tender and weakly plants and animals: indeed sudden changes in the weather are the cause of a great number of diseases which attack the healthy and the strong in both the vegetable and the animal world. The healthy and the strong, whether animal or plant, can stand extremes in the weather without injury, if those extremes are brought on by degrees; but a delicate or diseased plant or animal cannot do this. The potatoe is a very delicate plant at the best, and when *constitutionally* given to disease must be more so: when *not* constitutionally given to disease there are few plants, cultivated in the open air, more delicate. It is an *exotic*, and also a *tropical plant;* we may therefore expect it to be sooner affected, and more liable to disease, than a native one: therefore, considering the nature of the plant itself, and considering its present tendency to disease, it appears to me that the mischief done this season, more than in that of others lately, has been caused by the extremes of heat and cold, and excessive moisture, of some parts of the summer. In June we had the thermometer from 80° to 84° several days together; and, on the 30th of that month, the potatoe crops in Lancashire and Cheshire (the extent of my observation) never looked better or more promising for a heavy crop. July 1st was a cold stormy day. We have had no day in November this year with worse weather. On the morning following this crop looked 50 per cent. worse than on the last day of June. We had still cold wet weather for a fortnight; then we had fine weather, with a few hot days, for near a fortnight, which made this crop look as healthy and as vigorous as in the [illegible] week in June. This fine weather was followed by cold drenching rains, sometimes stormy, and the wind nearly always in the E, NE, N or NW, all bad points for the vegetable world. This weather continued to the 25th of August (near a month.) In August we had 8 inches of rain in Lancashire—a quantity almost unprecedented for that month. We had sometimes several days together of continued soaking rain. It did not fall in heavy showers, and run off the land immediately, but soaked through the soil.

I was twice through the counties of Lancashire, Yorkshire, and Cheshire in August, and I was astonished to see the change which took place in the appearance of the crops of all descriptions in the third week of that month. The continued cold rainy weather begun to tell dreadfully, particularly upon the *wheat* and *potatoe* crops. The disease then made its appearance in the latter in these three counties.

It is said the disease first made its appearance in the Isle of Wight, and proceeded northwards over the land like a wave. From every account I have seen as to the time of its first appearing there, it agrees with the time I, and many farmers, first saw it in these counties. There were diseased pototoes in Manchester market in August. I have been told there were diseased tubers in the early crops taken up in June, but I have never been told this by any actual grower, and there are a great number in this neighbourhood: of course, if this was the case, it was very partial and the damage very limited. However, I shall admit that this was the case, but it says nothing against the argument advanced, that the *principal cause* of the *extensive failure* was what I have stated. I say that this root is at present *constitutionally* given to disease; and, till there is a remedy for this, there will be a few diseased crops every year, however favourable the season may be. The way in which potatoes are diseased this season is of several years standing; it is not a new disease as some imagine. As I have before said, I attribute the extensive damage done this year to the sudden changes and the excessive cold continued rains of August. This weather was *general* not only over Britain and Ireland, but over France, Holland, and Germany. Foreign newspapers and travellers agree as to this, but perhaps not to the same degree in every part of these countries; neither has it been so with the disease, as I stated in my last letter in the *Herald*.

Some varieties of the potatoe are more subject to disease than others. Some fields or parts of fields, might be more luxuriant than others when the cold wet weather sets in, and thus sooner affected. Some fields, or parts of fields, would be more exposed to the storms and cold winds; and thus every variety of root, and every field, and every part of a field, would not be affected alike. It is the same with any epidemic, or any constitutional disease among men, or cattle, or sheep. All are not attacked. It is seldom that a whole family of the former, or a whole herd of the latter are; and those which are are not attacked in the same degree: some die and others recover; and as it is in the animal world so it will be in the vegetable.

Many are of opinion that the weather has been the cause of the extensive damage done by the disease this season, but could not account how every field was not affected to the same extent. The above will account for this.

Now as to a *remedy* for the *constitutional disease* in the potato. Mine is not original with me—many have faith in the same, and have published their opinions; but I may perhaps have some original ideas bearing on the subject, and therefore give them.

My remedy is a *renewal from seed*. This idea is, I know, ridiculed by some; but I have never yet heard or seen one who did so who produced a good argument in support of their ridicule, for theory they had none. They say that newly-raised sorts have been diseased as well as the old. This I shall not attempt to deny, as I do know that *really* new-raised sorts have been diseased; but this does not prove the theory to be wrong, even if they had been affected to the same extent, which has never been the case under my own observation of those newly raised from seed. If the cattle of a country were very subject to a disease, the remedy, to get a more healthy stock, would be to breed from the *healthiest* animals in *every succeeding generation.*—No one would expect to attain the highest degree of perfection in one generation. Thus, in potatoes, the first produce from seed might not be free from disease, but this should not convince a man that the theory was wrong. He should continue to raise from seed a generation or too further before he can be certain of its erroneousness or of its correctness.

Some men, I find, are of opinion that this root has been deteriorating for the last hundred years. This I do not believe. I have heard my father say that, about ten years before I was born, this root became affected by the *curl;* and that there was as much said and written upon its cause and remedies as upon the present; but notwithstanding this it continued to get worse, till *new varieties were raised* from seed. Two varieties of the old sorts, called "*White meals*" and "*Winter whites*," the farmers were exceedingly anxious to preserve on account of their quality, but were at last obliged to give them up. In 15 or 20 years there was not an old variety left in the parishes round Bury, and the *curl* entirely left that part of the country, which came under my observation. For 30 years or more, preceding 1830, I do not know of one single year in which this crop was diseased in any way, and I was a cultivator of potatoes every year during that time, either under my father or on my own account. We had sometimes bad crops, or, more properly speaking *light crops*, caused by bad seasons.

If a tree be raised from a cutting, no matter whether a fruit or a forest tree, it will decline and decay at the same time as the parent tree, and will be subject to the same disease. With plants raised from bulbs it may be generations before any decay may appear; but still it appears to me that, sooner or later resource must be had again to seed for a renewal of the constituion of the plant.

In horticulture, gardeners are continually raising plants from *seed*, which are quite as easy to raise from cuttings or bulbs. It is thus they are so successful in getting fine healthy flowers and plants.

All forest trees, hedge plants, and wild shrubs are raised from seed, and thus their *generic* and *specific* characters are preserved, and the same race of plants continue without wearing out, but the *varieties* are *ever changing*. Thus, the English oak, in its flowering and fruit-bearing comes generally under one of the following species, Quercus robur, Sessiliflora, or Pedunculata, but of the varieties there is no end. Scarcely two trees in a wood the same in its foliage, or other characteristic. It is the same with other trees and shrubs, the thorn, the hazle, the brier, and every other wild plant, whether tree, shrub, or herb, are ever changing in their *varieties*. Every plant, of the same genus and species, are as much unlike every other as one man is unlike every other man, or every horse, cow, or sheep, is unlike every other animal of the same species. Some plants, like some animals, exhibit a greater difference in their varieties than others do. I have always been a great admirer of nature, and have been a keen observer of her ways. It appears clear to me that to preserve the *general* vigour of races of plants, seed must be had recourse to. This she plainly points out. But in those plants which *can be raised from bulbs*, it is evidently not necessary to raise from seed *every year* to preserve their general vigour; but, that at some period or other it will be; and that this period may be longer or shorter according to the seasons or other circumstances, such as the hardiness or tenderness of the plants. Some plants, which can be raised from bulbs, may perhaps be continued to be thus raised for 1,000 years, without the original constitutional vigour of the race being very much impaired or become extinct. In others, 100 years might only be required. In others perhaps 20 years might bring on the same decay as to require raising the plants from seed. It is also exceedingly probable that a tender tropical plant will sooner be impaired in its vigour in a cold climate, when continually raised from bulbs, than if it were cultivated in its own native climate. Although, generally, a plant raised from seed varies some little from its parent yet it does not follow that it always does. It may now and then happen that a seedling may be exactly like its parent or some other variety raised before. In some races of plants this may occur more often than in others. Of course some varieties of potatoes may be considered old varieties, and in fact are so although newly raised from seed; therefore it is said, that old varieties have escaped the disease, it may be possible that they may have been raised from seed not many years before. On the other hand some of the diseased crops *said* to be *new varieties* may not be so in *reality*. There is great roguery in selling seed potatoes. Very often *old varieties* have *new names* given them. Very often a farmer will buy seed in the market which are *really new* to him, but are very *old sorts* in the neighbourhood from which they have come. And this may happen without any intention of the seller to deceive the buyer. It is well known that the names of varieties are very frequently changed, sometimes for *mere fancy*, and often for *interested motives*. I have always been fond of experiments in farming; and, like many of John Bull's sons, have been easily and often gulled with puffing advertisements. I have given

10s. 6d. per bushel, besides paying the carriage from London, (200 miles,) for what were called *new varieties* of the potatoe, and when they got home I have found that the *name* only was new,—in short, that I had been cultivating the very same sorts for 10 or 15 years. I therefore, do not always consider it as a *fact* when I hear people say that *new raised varieties* have been as much or more diseased than the old ones, although they may think it true. Then again, some men will not state the truth, wishing to cover their own neglect by a falsehood, or, from a love of the wonderful, or, having got a crotchet in their head, are determined that no fact shall drive it out. At the same time, I admit, as I have before done, that new raised sorts have no doubt been diseased, but this is no proof of the theory being false, from reasons before stated. In short, I consider it a *fact* not to be *well disproved*, that, having recourse to raising from seed *did* drive away the *curl* from the potato, in Lancashire, 50 years ago. I am firmly of opinion that to adopt the same course now would produce the same effect with the present disease; but not without patience; but without going to *Peru* either for *tubers or seed*. When potatoes continue healthy season after season, farmers never think of raising new sorts, as it is a tedious process, and attended with considerable trouble and care. Fifty varieties may be raised for one good one.

I should recommend our principal agricultural societies taking up the business of raising from the apple. From my own experience I would not buy what were called new sorts from any man, except I knew he was a perfectly honest man, and that he had raised them *himself*.

Since writing the above, I have read two articles in the *Gardeners' Chronicle* of the 13th and 20th of this month, in both of which the writer endeavours to overturn the theory I advocate; but in neither papers do I find any sound argument against it, although written, I must admit, by a very learned and a very scientific gentleman. In my next I may perhaps remark upon it; but in doing so I may perhaps be "*running my head* into the *lion's mouth*."—*W. Rothwell, Winwick, Dec.* 24, 1845.

SULPHATE OF AMMONIA AS A MANURE.

Having used the above substance both in a liquid and crystalised condition, in various sets of comparative experiments with other artificial manures, I conceive a few words as to its application and operation may not be uninteresting to some of your readers; the more so as I observe in the *Farmers' Herald* certain queries concerning it not yet replied to. (See No. 10, p. 109.)

The fact that Ammonia exercises a beneficial influence on growing vegetables is now so well established as hardly to require notice—the question is how can it be most easily procured? and how best applied? And, here we have one of the daily occuring instances, in which the application of science, to one department of social economy, (in this to the lighting of our houses with coal gas,) is only the opening up of a variety of other and collateral improvements. In the distillation of coals for lighting, a considerable amount of ammoniacal gas is eleminated—by a process not necessary to be here described. In the purifying operation, this ammonia becomes separated from the combustible gas, and is found in the chambers of the apparatus, chiefly in combination with water, coal-tar, and sulpherated hydrogen. And altho' the two last named substances have a highly inimical action upon vegetables, yet the whole liquid, crude as it is, if well diluted with water, may be used with safety and advantage, either on grass or growing corn; and to those who are near gas-works, where the carriage is not great, no better way of using it can be proposed. Its action, is, in the first instance, (especially if applied in dry weather,) to brown and destroy the tender leaves, which may happen to get saturated with it, (which, however, may be obviated, by applying it in rain,) and this in the course of eight or ten days, is succeeded by the most luxuriant verdure that can well be imagined.

For application in this way, no rule can be given as to the quantity, because of the variable strength of the gas refuse; the best rule is to dilute well, and go on repeating the application so long as no evil consequences shew themselves. If greater accuracy is required, it may be attained by neutralising the Amoniacal liquor with sulphuric acid, and calculating the weight of salt formed, from the weight of acid required to produce neutrality. The strongest rectified sulphuric acid prepared in this country has a combining power for ammonia in the proportion of 48 parts of acid, to 17 of Ammonia, producing 65 parts of the crystalised salt. But, as the sulphuric acid of commerce always contains a little more water than it should do, we will be near enough the truth, for all agricultural purposes, to say—that every 45lbs. of sulphuric acid, neutralised by Ammonia, is equal to about ½ cwt. of the sulphate.

To explain more fully, for the benefit of the non-chemical readers of the *Farmers' Herald*, what is meant by neutralisation—the following simple experiment may be performed by any of them: take and boil a piece of cabbage in water, (the Old Dutch red is the best,) till it have a distinctly blue colour, and allow it to settle and cool—call this vegetable infusion. Then procure some sulphuric acid (oil of vitriol), and Aqua Ammonia (spirit of hartshorn), and two or three common wine glasses, and you are prepared for testing. Into each of two glasses put a little of the vegetable infusion, and to the one, add a few drops of the ammonia, and to the other a few drops of the vitriol; in the case of the ammonia the blue colour of the infusion will be turned to a bright green, and in that of the acid to a pink or crimson red. Take now a third glass, and mix in it a quantity of the ammonia and acid together, by doing this judiciously, a combination will be attained that will have no effect upon the vegetable infusion—neither to turn it green nor red—this then is neutrality, and the liquid so proportioned, will yield upon evaporation, the neutral crystalised Sulphate of Ammonia—the quantity depending in some measure upon the amount of water combining with it in crystalising, which again will depend upon the mode in which it is evaporated. Sufficiently accurate, however, for agricultural purposes, is the *formula* given above—that every 45 parts of acid give 50 to 56 parts of salt.

The preparation of the dissolved salt from the ammoniacal liquor of the gas works is exactly the same process; the liquor in a cask or tank, and the acid and vegetable infusion at hand is all that is requisite; care must be taken to add the acid gradually, as considerable effervescence takes place from the escape of a large quantity of sulpherated hydrogen, previously held in solution, and which it is of much importance to get rid of, from its pernicious effects upon vegetation; stirring, during the process of neutralisation will much facilitate this escape. After neutrality is secured, (which can easily be ascertained by reference to the blue infusion,) the coal-tar will have a greater tendency to sink to the bottom, so that with a little care, the liquor may be said to be comparatively free from impurities, and fit for application; and the quantity to be applied can easily be fixed from the amount of acid used in the preparation. In using the crystalised salt I have found 1½ cwt. a sufficient dose per imperial acre, in hard, dry, or poor soils 2 cwt. might be given, but the lowest figure I consider the more profitable. It will also be found profitable, if attainable, to halve the amount to be used, and apply it at twice; the reason of this is plain—Sulphate of ammonia is both soluble in its nature, and evanescent in its action; and, unless its action be somewhat graduated, it will do either too much or too little.

I have thus dwelt at considerable length, upon the way, in which the farmer might be useful to himself, in preparing and applying the refuse ammonia of the gas-works, where it can be conveniently had; in many places it can still be got for nothing, and thanks to take it away: in other places the gas-manufacturerers are preparing the commercial salt from the liquor, themselves, as a regular part of their manufacture. And, it will be upon this supply, that the farmer will ultimately have to depend, of course in this way it cannot be obtained so cheaply; the manufacturer must have his profits, and so on—but, then there are advantages in its portability, convenience and safety of application, perhaps equal to this, at least, it is best for farmers to think so when they cannot do better.

A word now upon its mode of action, and I shall have done—I have used it upon turnips, potatoes, grass, and oats, after both lea and green crops. Its effects I have found highly beneficial, upon grass and oats, after lea—less so upon oats after turnips—still less on potatoes—and decidedly prejudicial upon turnips. In regard to the latter, its effects seemed to be inimical to the very germination of the seeds, and even when applied carefully along the tops of the drills, after they were hoed, many of the plants with difficulty survived it. Upon potatoes its action was rather obscure, doing apparently, neither good nor harm. In oats, after turnips, the sulphate of ammonia produced a considerable appearance, soon after application, deepening and vivifying the green in a very remarkable manner. The soil, however, on which it was used was thin and poor, and there seemed a deficiency of organisable matter for the production of a full crop. Many of the stalks became flacade and weakly, and dwindled to nothing, when they should have been coming into ear; and in all, the grain was light and inferior; I do not, however, say, that this would have been so much the case had the soil been more abundant in organic materials. In oats, after lea, the effects were markedly different, the crop started early, and grew vigorously, the ripening was not very equal, nor the grain very heavy, still the crop was a fair one, and the increase much more than compensatory of the expense of the application. In grass, for hay, this was still more so the case, one thing however being peculiar about it, namely, that the benefit was confined exclusively to the rye-grass, the clover, being, if any way affected, worse for it.

From these remarks, which are simply the condensed results of a varied and pretty extensive series of experiments, continued over three successive seasons, it is evident, that Sulphate of Ammonia, as a manure, though highly useful and profitable in many cases, is yet capricious in its action, if we may so speak, and requiring to be used with much judgment and discretion. For green crops I would never recommend it, and for grass I would consider it much more fitting than for grain, especially I would say, for rye or natural grasses. It should always be applied while the crop it is intended to nourish is in a growing state, and if possible, its application made gradual and continuous. If used as a manure for grain crops, it should only be in such soils as contain sufficient of the other elements necessary for the perfecting of the plants. sulphate of ammonia, altho' it may produce plenty of green leaves, is deficient in those matters requisite for the perfecting of the straw and grain.—*M. Cuming, Banff, N.B.*

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KEEPING DRAUGHT HORSES.

At the meeting of the Darlington farmers' club held on the 8th ult. Mr. Walton, vice-chairman, in opening the meeting, said—Gentlemen, the subject proposed for this afternoon's discussion is "The best and cheapest mode of keeping Draught Horses during winter." This is a subject of some importance to most of us, for Draught Horses are undoubtedly expensive stock, and therefore, it is desirable to keep them as economically as practicable; care being taken at the same time to keep them in good working condition: this subject was proposed by Mr. Trotter, who being now present, I beg to call upon him to bring the matter more fully before you, and who, I have no doubt, will also be able to give some practical information on the subject: Mr. Trotter said—Mr. Chairman and Gentlemen, I have paid some attention to the subject of keeping Draught Horses during winter, for some years past, but for the last three years I have adopted quite a different mode to what I previously followed. My method formerly was to allow my Draught Horses, each, two bushels of oats per week, together with one bushel of beans, and as much hay as they could eat; generally, clover-hay; but for the last three winters I have fed them almost entirely on cut oat-sheaf, cut into half-inch chaff, which to me has been a very great saving. In an oat crop of about 40 stooks per acre, which might yield near 60 bushels; the feed of a Draught Horse averages two sheaves per day, or 14 sheaves per week, which would be about a bushel and three pecks per week if they had been thrashed out, which is a saving of a peck of oats per week each horse, from what I formerly gave them; besides, I save the bushel of bran per week and the clover-hay, which was a very considerable item; for Draught Horses you are aware gentlemen, when they get three feeds of clean oats in a day, when at work, they will eat a great quantity of clover-hay besides. Now when I first changed my mode of feeding, from corn and hay to cut-sheaf, the Horses improved in condition wonderfully, thus shewing, that it suits them well. In very busy seasons when they are hard-worked, I allow them half a peck of oats at dinner time, besides the cut-sheaf. Last winter, I had only 18 acres of oats, those kept 12 draught horses, besides four young horses occasionally: this quantity of oats would not have served me through the year had I not pursued this system of feeding. The mode I have adopted of preparing the cut-sheaf is this: I have my straw-cutter to work from the horse wheel of my thrashing machine, and I generally have as much cut in one day as will serve 12 Draught Horses for near a month. One man attends to and feeds the cutter with the oat sheaves, whilst another man carries the cut-sheaf into the granary, ready for use, when it is taken to the stable, in bags, as required.

At the close of Mr. Trotter's remarks, a rather lengthy discussion ensued on the subject, but upon the whole it appeared Mr. Trotter's mode was much the cheapest. The Secretary also read an extract from the Highland and Agricultural Society's transactions, by Mr. Carmichael, in which he says, in speaking of the Draught Horses of the clayey districts of Scotland—that " in the winter months, each horse has a daily mess or mash of boiled or stewed (not steamed) bean-chaff, mixed with light corn and small. Beans separated by the winnowing machine or sieve from the best grain, to which, a few turnips and a portion of salt are added, with just enough of water to secure the boiler from injury, whilst the whole is being reduced to a pulpy state, and the pulp is then put into one or more troughs, to remain till the evening, when the mash is divided among the horses, at a temperature of about blood heat, immediately on their return from the yoke—this, with bean straw, and the additional allowance of one feed of inferior oats and beans in the morning, and one at mid-day, when constantly employed, keeps the Horses in best possible condition." At the conclusion of the meeting, it was resolved, that from the statement of Mr. Trotter, it appears that his mode of feeding Draught Horses is much more economical than the methods usually practiced, therefore it is desirable that it should be more generally adopted.

ON THE MANAGEMENT OF COMPOST HEAPS.

We give insertion to the following letter from North Dalrymple, Esq. of Fordel aud Cleland, to Mr. M'Bryde, Balcar, Secretary to the Rhinns Farmers' Society.

I promised you when you were here to send you an account of our way of making muck. It is, however, only Lord Meadowbank's plan, with the addition of urine and some different details. For instance, his Lordship made up his dunghill at once, having a quantity of materials ready, whereas we mix our muck, moss, &c. once a week.

1st. In the spring, or indeed in any season, we dig the moss, throwing it into a heap of about four feet thick, which will subside a good deal after getting the winter frost and the summer sun, when the rain washes out the tanin, which is poisonous to vegetation. A man can dig 48 cubic yards of moss for a shilling. A cubic yard is thrown into the Forth for a farthing. In the summer season, and in dry weather, the moss should be broken, to dry it; the best way is to spread it, and put the roller over it, and then keep turning it with a long hoe till a great part of the moisture is expunged from it, as this makes the carriage less expensive. The cart that brings it to the yard should have large wings to make it hold more. When brought home it ought to be put *under cover*, say the cattle sheds.

2d. All the stable, byre, &c. dung is laid in a convenient part of the yard to where the dunghill is to be formed, and compactly together, to exclude as much as possible the sun and air; and a man might tramp a little on it to keep the ammonia from escaping. This dung is mixed with moss every Saturday, in the following method, viz. a layer of moss four inches thick is laid on the space where the midden is to be built, above that we put dung, then moss, next dung, and so on in the proportion of one ton of dung to three of mess, till it is *three and a half feet high:* the last layer must be moss four inches thick. When it is half its height it should be watered with cesspool water: and, again, when at its intended height the whole moss should have buckets full of urine thrown over it to saturate it well. Every other day moss is put all round to catch any liquor that may ooze out, and this may be mixed with the midden again when it is turned. We always build our dunghills to a wall. This first dunghill then, (or pie, as we call it), must be its own breadth from the wall, leaving a space of four feet between it and the next pie to be made, and this is for the man to walk whilst turning it. The next Saturday this first made up pie is turned to the wall, and watered every eighteen inches or two feet, and made *five feet high*, or even six, if room is required; under it must be four inches of moss, as before described. This is intended to save the juices, and it may be covered with four inches of moss, over that whins or sticks to keep the hens from scratching. This, too, may be watered now and then on the surface if you have urine to spare. When this is finished, a new pie must be made *on the old stand* of the rough dung lying in the yard and moss as before, always leaving a space for the man to walk. This again on the next Saturday is made five feet or more in height, and so on. This will be in prime order for using two months' after it is made. The moss at the top will fix the gases, and the dung, cart for cart, will produce as good crops as any common farm-yard muck. I don't know whether your moss is so near as to make this pay, but of course you will make your calculations. I generally keep six pigs, which make an uncommon quantity of excellent muck, in this way; on a Saturday I put four inches of moss in the yard of the stye, then straw and next urine; this is repeated twice a week, and in a fortnight, or on the second Saturday, they are cleaned out, and their dung mixed with the cow, horse, and other dung, to be made into a pie that day; and this is repeated every fortnight. The horse, cow, and pig dung are better mixed together, layer and layer, which prevents the former from fire-fanging. You saw a midden in my yard which measured above a hundred tons, and that was made in less than four months from eight cows, which were in the house half the day, eight horses, which are a good deal at grass in summer (except the carriage horses) and six pigs.

3d. When we have urine to spare we put it on dry moss under cover till it will imbibe no more: this is turned in about two months, and if allowed to lie for some time becomes a rich manure. We have also several necessaries; the night soil is received into wooden boxes on four small wheels, and these are cleared out at certain times and mixed with moss, at the rate of ten of moss to one of the other. Moss is always put into the bottom of the boxes after they are emptied, which saves the urine, and the boxes should be so fitted that not a drop of this is lost. You may think all this expensive, but if you have an *orra man* he can do these jobs as he has time. We lose nothing that will ferment—road and ditch scrapings, hedge scourings, weeds, (not in seed) sawdust, brackens, rushes, leaves, cabbage and kail stocks, &c. &c. The lowest part of the peat moss is the richest—what is at the top is apt to produce chickweed—and it should be compounded with lime.

4th. We have several cess pools for collecting the urine, which otherwise would be lost. There are drains through the cattle yard and round the walls inside, which lodge in the cess pool, and when one is full, what runs over goes into another, and so does the stable and byre urine, and the soap suds from the washing house.—Even the greasy water, &c. from the kitchen should be collected, and if thrown on moss will add to the dunghill. My land, which was poor a few years ago, is now in good heart; and the field of oats I showed you near the house produced 758 stooks on seven Scotch acres.

Lastly, Cess Pools.—In land that will not water, the sides of the tank require to be built with ashlar, bedded on and pointed with Roman cement and sand, paved with square jointed flags, and pointed with the same material. If the tank is to be covered, the best and cheapest covering is a flat brick arch. A tank measuring twelve cubic yards in the interior will hold 2,000 gallons of liquor. Assuming it to be built one yard in depth, four yards long, and three wide, it will cost, exclusive of excavating the earth and carriage of materials, as under, viz.:—

126 square feet, building sides and ends, at 9d..............	£4	14	6
12 square yards pavement, at 4s.	2	8	0
700 bricks for arch, at 2s. 9d....	0	19	3
Building arch, say............	0	10	0
	£8	11	9

Tanks can be built in retentive clay soils for about half the above, as ruble building is sufficient. An open tank may be made, too, to throw moss and urine into, and thus save an arch, but it must be under a shed.

If you put a dead horse or cow against a wall, and cover it with ten tons of peat moss, it will make that quantity of manure in eighteen months; but it must be turned before using, some time.

I forgot to mention several experiments which we made here with peat moss and other substances mixed together—such as moss with salt (impure can be got very cheap at Ayr, but the best salt is the best bargain); moss with salt and urine; nitrates and sulphates with the same; also, moss with bone-dust, finely ground, and with rape dust, guano, salt and lime, ammoniacal liquors, &c. If your brother will try such experiments on a small scale, you will see their effect on the soil, and whether they will pay or not; and as he is such an experienced chemist, he may serve you much in this way; and I shall be happy to hear from you or him what success you have had. I found all to do well here, and am quite certain from what I have seen of peat moss (and I have been working with it for 15 years), that it is quite valuable as a manure, with certain mixtures.—I would advise you, too, to try charing moss; and if this will pay, as Mr. Smith of Deanston says it will, it must prove of great service to you.—*Ayrshire Agricul.*

STALL FEEDING MILCH COWS.

As our colums have been some time open to the consideration of this subject, and as much as been written upon it by several valued correspondents, we add, as our mite to the general stock of information, the following from the *Agricultural Gazette*:—

" As the practice of soiling milch cattle has been frequently recommended by agricultural writers, I have long had a wish to test its value as a profitable practice, but until this year never had an opportunity of doing so under favourable circumstances; my hopes were in favour of the system, and, consequently, I was much disappointed in finding that there would be a very considerable loss in following it. The pasture in which a dairy of twenty cows were grazed, had become bare at the end of July, at the same time a few acres of excellent young grass was growing adjoining the milking-yards, and as the wet weather which then set in prevented its conversion into hay, a resolution was formed to test the merits of soiling, as no doubt existed as to the advantage derivable from the plan as far as the manure-heap is considered. The grass was mown, and brought to them as they eat it; they had access to water three times a day, and were on the whole treated as ordinary stall-fed cattle; the consequence was, that the first day they did not feed freely, and the produce of milk was considerably diminished; the next day the cows fed very freely, still the produce continued to get less, and at the end of eight days the produce of the dairy had fallen to about one-half the usual quantity in milk, and two-thirds the produce in butter; the cows were then returned to the pasture, the system being considered decidedly inapplicable to milch cattle in the summer season, and, in twelve hours, the produce in milk nearly equalled the previous quantity.—*J. B. Bradon.*

PULVERISATION OF THE SOIL.

THE following paper on this subject we copy from a contemporary:—

The grand object of pulverisation of the soil is to give free scope to the roots of plants, for without an abundance of roots no plant will become vigorous, however rich the soil may be in which it is planted. Pulverisation, therefore, is not only advantageous previous to planting, or sowing, but also during the progress of vegetation of most plants. At this stage the operator, by means of pruning, or cutting off the extended fibres, causes them to send out numerous others, by which such food as is in the soil is the more readily taken up. Pulverisation increases the capillary attraction, or sponge-like property of soils, by which their humidity is rendered more uniform. This capillary attraction is always greatest where the particles of the soil are finely divided. Gravels or sands retain little or no water, while stiff soils, as clays, which have not been opened by pulverisation, either do not absorb water, when by long action it is absorbed, they retain too much. Water is not only necessary to the growth of plants, but it is essential to the production of extract from the vegetable matter which they contain, and unless the soil by pulverisation is so constituted as to retain the requisite quantity of water to produce this extract, the application of manures would be useless. Water is known to be a condenser and solvent of carbonic acid gas, which is immediately carried by it to the roots of vegetables. The depth of pulverisation must depend upon the soil and subsoil. In rich lands it can scarcely be too deep, and even in sands, unless the subsoil contains particles noxious to vegetables; but very dry sands, if the season is hot and dry, should merely be stirred, otherwise the great evaporation of moisture which would take place by deep pulverisation, would render them too dry for vigorous growth of plants. By deep pulverisation the temperature of the earth is increased. As earths are bad conductors of heat, it would be a considerable time before the gradual increasing temperature of spring could communicate its genial warmth to the roots of vegetables. It is thus of the utmost importance to have the land open, so that the warm air and tepid rains of spring may have free ingress. Some soils are more readily heated than others, and some soils cool much sooner than onbers. In general, soils that consist principally of a stiff white clay are difficult to heat, and being usually very moist, they retain the heat only for a short time. Chalks are similar in one respect, they are difficult to heat, but being dry they retain the heat longer. A black soil is readily heated: coloured soils, and those soils containing much carbonaceous matter, exposed under equal circumstances, acquire a much higher temperature than pale-coloured soils. When soils are perfectly dry, those which most readily become heated by the solar rays, likewise cool much more rapidly. Abundance of animal and vegetable matter, when heated to the same degree, will cool much more slowly than a wet pale soil entirely composed of earthy matter. Sir H. Davy found "that a rich black mould, which contained nearly one-fourth of vegetable matter, had its temperature increased in one hour from 65° to 88°, by exposure to sunshine; whilst a chalk soil was heated only to 60°, under the same circumstances; but the mould removed into the shade, where the temperature was 62°, lost, in half an hour, 15°, whereas, the chalk, under the same circumstances, had lost only 4°. A brown fertile soil, and a cold barren clay, was each artificially heated to 88°, having been previously dried. They were then exposed to the temperature of 57°; in half an hour the dark soil was found to have lost 9°, and the clay 6°. An equal portion of the clay containing moisture, after having been heated to 88°, was exposed to a temperature of 65°; in less than a quarter of an hour it was found to hove gained the temperature of the room."

The moisture of the soil and subsoil materially affects its temperature, and prevents their ever attaining to any great degree of either heat or cold. As before remarked, the power of soils to absorb water depends in a great measure upon the division of their parts; the more divided they are, the greater is their absorbent power. The different constituent parts of the soil likewise appear to act with different degrees of energy. Thus, vegetable substances are more absorbent than animal substances; animal substances more so than compounds of alumina and silica; and compounds of alumina and silica more so than carbonate of lime and magnesia. This differences, however, depend greatly upon the state of division, and the surface exposed. Stiff clays, which absorb the greatest quantity of water when it is poured upon them in a fluid state, are not the soils which absorb the most moisture from the atmosphere in dry weather. They cake, or run together in hard lumps, and present only a small surface to the air, which requires much trouble to reduce to a fine state, and in hot dry seasons the vegetation on them is generally burnt up almost as readily as on sands. The soils which are most efficient in supplying the plant with water by atmospheric absorption are those in which there is a mixture of sand, clay, and carbonate of lime, with some animal and vegetable matter, and which are loose and tight, so as to be permeable to the atmosphere. With respect to this quailty, animal and vegetable matter, with carbonate of lime, are of the greatest use in soils; they give absorbent power to the soil without giving it tenacity. Sand, which also destroys tenacity, on the contrary, gives little absorbent power. The absorbent power of soils with respect to atmospheric moisture, is always greatest in the most fertile soils. When soils are immediately situated upon a bed of rock or stone, they dry sooner by evaporation than when their subsoil is of clay or marl. A clayey subsoil will sometimes be of material advantage to a sandy soil; in this case it will retain moisture in such a manner as to be capable of supplying that lost by the earth above, in consequence of evaporation, or consumption of it by plants. On the other hand, a sandy or gravelly subsoil often corrects the imperfection of too great a degree of absorbent power in the true soil. In a moist climate a siliceous sandy soil is much more productive than in dry districts; and, in such situations, wheat and beans will require a less absorbent soil than in dry situations; and plants having bulbous roots, will flourish in a soil containing as much as 14 parts out of 15 of sand. Even the exhausting powers of crops will be influenced by like circumstances; for, by means of pulverization, the atmospheric air buried in the soil is of essential assistance (by its influence on the food of plants there lying) in the maintenance of vegetable growth. Heat is given out during the chemical processes which ensue, and hence the great propriety of cropping lands immediately after they have been turned over, and this especially if manure has been added at the same time; as the process of fermentation will go on faster when the soil is loose, and the cavities filled with air, than afterwards, when it becomes compressed with *its own gravity. The* advantage of heat thus obtained in exciting vegetation—whether in respect to seed or roots, especially in spring, when the soil is cold—must be very great.

There is yet an undecided point amongst many farmers relative to the best manner of laying the furrow slice. Some contend for turning it completely over, i. e., laying it quite flat; and others, that it is most advantageous to place each slice in such a manner that its outer edge may extend a little over the inner edge of the furrow which was drawn before it. In my opinion the principal objects in ploughing are, to expose as much as possible to the atmosphere, and lay the land so that the harrow may in the most effectual manner raise the mould to cover the seed; these objects are the more readily accomplished by ploughing land of every description (with the exception of dry sandy soil) with a furrow slice of 7 inches deep and about 10½ broad; the furrow slice will form an angle of about 45°. The depth of the furrow should, in general, bear a due proportion to the width, i. e., about two-thirds, or as six inches deep is to nine broad. The angle 45° is strongly recommended in Bayley's Essay on the "Construction of the plough," and in Brown's Treatise on "Rural Affairs." Ploughing previous to winter setting in is of great use to stiff clayey lands, exposing the surface to the frost, which mellows and reduces it in a manner infinitely superior to what could be accomplished by all the operations of man; the hollow place between the furrows will carry off all superfluous water, and render the soil, with the action of the winter's frost, fit for tillage earlier in spring. The harrows will also more readily take hold of the soil, and thus a proper mould will be procured for covering the seeds. Should there be danger of the land lying too loose and hollow, repeatedly harrowing, and rolling it with a heavy roller, will furnish a remedy.

Dry sandy soils should not be ploughed in ridges, but be turned completely over and kept as level as possible. Such soils, if rendered loose, and laid light by cultivation will be greatly robbed of their fertilizing particles. It is of the greatest advantage to such soils to fold sheep, or to consume the crops of turnips upon the ground where they are raised. This practice has now become pretty general over England, as it is found from experience to contribute to the improvement of such soils, not only by the dung and urine thus deposited, but by the consolidation and firmness of texture, which the treading of the sheep occasions. The cultivators of this kind of soil have, therefore, many advantages over those who are engaged in the more stiff and heavy sorts of soils, in being able to perform the various operations of arable husbandry with much less expense, and being less interrupted by a wet and backward season. I have already adverted to deep ploughing, and the results to be derived from it. And, in conclusion, I would remark, that some proportion ought to be observed between the depth of ploughing, the nature of the soil, subsoil, and the quantity of manure annually spread. I have witnessed where old pasture-land of a sandy loam has been broken up in spring for a crop of oats by subsoil ploughing, that the crop failed. Now there appears to me two reasons for this failure; in the first case, the subsoil brought to the surface to form the seed-bed had long been deprived of the action of the atmospheric gasses, consequently must have been infertile and cold. In the second case, the dry tenacious sward being placed under the seed-bed, the moisture of the soil was quickly evaporated. The grand object of deep pulverisation is to cause the soil to retain heat and moisture, so necessary to the healthy growth of vegetables of every description.—*J. M'Intosh.*

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SHEEP FARMING.

To breed first-rate sheep is a science, requiring a skill and attention only obtained by the few. They make a class or breed of sheep adapted to the soil they use. Those who are purchasers should keep this in view, whether they only buy to fat, or lamb and sell out to again purchase fresh flocks.

Those who do this, mostly farm land considered the most deleterious to sheep—such as cold wet clays. These are certainly the most difficult. As there has not been a scientific breeder yet induced to try them as sheep farms, from its being found that, although they will do sometimes very well upon these soils, they never or rarely do good two years running, particularly if the sheep are kept. The reason is, that in dry seasons they thrive very well. These we rarely have two years in succession. The sheep are mostly bred on drier soils. They are, therefore, subject, on coming into wet, to severe catarrhs, colds, and diseases of the lungs and feet. It is a common remark in these clay districts, that one tainted foot will frequently poison the land for two or three years. So that any other sheep brought into these farms during this period are sure to be similarly affected. The breath of those diseased in other ways is also erroneously supposed to have communicated the disease to the earth. This error has arisen from the certainty of the particular disease afflicting the sheep during that period; not that the land has taken any disease from the sheep, but the same cause that gave disease to the first flock still exists—the land constantly wet; for there are generally two or three wet summers to one dry one. The first dry season they again do well, when the poison is supposed to have left the land, either from being exhausted by time, or carried off by the atmosphere.

Some sheep are found to do better on these soils than others. The best bred are the worst thrivers on these unpropitious soils, and most subject to disease.

Thus the high bred Downs from Banstead, or the South Downs, soon become ailing in wet seasons when moved into cold wet pastures. They have been used to clear, dry air, and dry soils, with more nutritious and less succulent grasses. Their hoofs are hard and dry. When they come into wetter soils, the secretion of horn becomes altered, and instead of forming healthy horns, the glands throw out a pungent liquid, and the sheep is affected with what is called foot-rot. The catarrhs and colds, with other diseases, must be expected as a consequence when animals reared on a dry, healthy soil, are compelled to keep perpetually in the wet, more particularly as they always seek the highest and driest soil to lie down, even on the downs. In the fens of Lincolnshire, these down sheep will not do at all; neither will the fen sheep do on these soils; not on account of the wet, but from the want of nutriment in the keep.

Leicesters and other celebrated sheep have been tried, and failed from the latter cause.

The sheep that thrive best are crosses of an untraceable nature, with a show of down, such as are bred accidentally, or rather in the hap-hazard way mostly resorted to by poor farmers who consider a lamb is a lamb, whatever may be its parentage. They usually occupy land something of the same nature as that described above, but somewhat drier, and these are the only class that can be at all times depended on to take the risk of seasons on wet poor farms.

They are a hardy, large-boned, more spongy-hoofed, coarse-woolled sheep—larger than the true Down, and answer for the butcher. But even these rarely succeed two years on these soils without a change. If ewes, to lamb them, and sell off as soon as the lambs are fat, is the best way. Or if wethers, fat and sell, so as to have a new flock each year.

Not but that a breed might be formed to suit these soils, as has been the case with fenny districts. Those with capital and requisite skill, however, have not hitherto been tempted to try, and those without both are sure not to succeed. A little time would accomplish the purpose, and pay well for the speculation.

There are some soils that are at times even more deleterious than the clays—these are those gravels which hold water in little holes. This water soon turns grassy on the top, and is the unsuspected cause of red water, not only in sheep but cattle also, if in the neighbourhood of trees, as the cattle and sheep eat all the young buds and shoots they can reach in the spring and autumn. The disease is attributed to the indigestible nature of this food, or some peculiar poison in the buds.

The fact is, they are of a fine tonic, and ward off the disease in many instances. It is the water before named which excites the kidneys and weakens their powers, so that the urine is imperfectly formed, and passes partly mixed with blood. The disease is easily cured if noticed in time, otherwise, if neglected, black water and death quickly follow. No class of cattle can long withstand the attack in these pastures in wet seasons. Prevention of the disease is easy. Render these holes porous, if you do not drain the whole field, by digging them up two or three feet deep, putting large stones at the bottom, smaller on them, with sand at top for a foot deep, and then fill in the soil. This can be done at so trifling a cost, as not to leave the poorest farmer an excuse, as he will probably turn up stones enough in digging the hole; if not, they are close at hand.

These diseases are mostly composed of clay in a porous gravel, so that the water will readily find its way out of the holes sunk for its reception.

Where the disease is engendered by feeding on heaths and commons, the best way is to take them into the fields or yards at spring and fall, till the water is dried out of these basins.—*Western Agricul.*

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To Sweeten Butter.—It has been discovered by Arthur Trevelyan, Esq, of Wallington, whilst lately engaged in making some experiments, that 2½ drachms of carbonate of soda added to 3 lbs. of either fresh or salt butter, possessing a disagreeable flavour, renders it perfectly sweet. Soda produces the same results when added to other culinary greases, as dripping, lard, &c.

Bees.—The following method is recommended for obtaining the honey without destroying the bees. In place of the common hive, square boxes are to be preferred, made of thin board, about 14 inches each way at top, and eight inches deep; each box to have a square hole cut out in the centre of the bottom and top, of about three inches across, exactly opposite to each other, and a slip of thin board fitted to each hole, to slip out and in as occasion may require. These boxes are placed close on the top of each other, to the number of three or four, and the slides draw back the breadth of the hole, so that they will have a communication with each other. The bees are put into the uppermost box, and when it is completely filled with comb, in place of swarming (as they must do in the common hive) they work down into the second box, and so on to the bottom. By putting a pane of glass in the side of each box, it can always be seen what progress they make downwards. By the time they are down to the third box, the slide is then to be thrust in, and cut off the communication between the first and second; the upper box can be lifted off full of pure honey, without a single bee in it. By the time they have reached the lowermost box, they are to be lifted off gently, and an empty one put in below it, and so on. Any number of sets of these boxes can be had which the stock requires; and they are to be placed in a wooden frame of convenient width, and in length to answer the quantity intended to be kept: it is to be boarded entirely round; the north side, however, to open on hinges, for the more convenient taking out and putting in the boxes.

Southampton Prize Wheat.—-At the annual meeting of the Bristol Agricultural Association, W. Miles, Esq., M.P., observed, it would be remembered that, together with Lord Spencer, he had been appointed by the Royal Agricultural Society of England to try the Southampton prize wheat against other wheats. He had tried it against four other wheats, and Lord Spencer against two other kinds, and in both their experiments it had turned out the worst of the whole. He (Mr. Miles) had tried it against Jonas's prolific seedling, the Hopetown, the red straw white, and against a wheat not much known in this country, but which he had procured from Scotland, through a gentleman, Mr. Hope, who spoke of it in the highest terms as a wheat which yields an increased produce on any land, equal to the rent of the land, called Fenton's wheat. These wheats he drilled in after the rate of two bushels per acre (which he considered the best quantity), and the produce was as follows:—Jonas's prolific seedling, 55 bushels 2 pecks per acre; red straw white, 47 bushels 2 pecks; Hopetown, 54 bushels 1 peck; Southampton prize wheat, 40 bushels 2 pecks; and Fenton, 54 bushels per acre. After advising his hearers to change their seeds and variety, by which he was sure a great deal of good might be effected, the chairman proceeded to state the result of some experiments with Newburn's dibbling machine, manufactured by Earl Ducie. He had with this machine sown the very smallest quantity—two pecks per acre. It would be recollected that the spring was very much against their sowing. They had about March very biting winds, and as the experiment was tried on a sloping field, and at the top less deep than at the bottom, it as a whole failed. They, however, selected a portion of the field to try the result; the crop was, of the red straw white, 34 bushels 3¼ pecks per acre; Hopetown, 34 bushels 3 pecks; Southampton prize wheat, 32 bushels; Fenton, 40 bushels 2¼ pecks— a very extraordinary produce. His opinion of the machine was, that on a flat surface, and with light ground, it would be found to be a most valuable instrument. He should state, that in Buckinghamshire and Hampshire, where it was used, the general rate of sowing was five pecks per acre. The next experiment he had tried was upon turnips. The seed he used was Skirving's. He was anxious to get a good crop with as little manure as possible, as thereby much expense of haulage would be saved. Instead of using 20 tons of manure per acre, he employed 10 tons, and he used with it two descriptions of assistant manure. With the first lot he put 10 bushels of the ashes of burnt weeds, and with the other 10 bushels of powdered animal carbon, the refuse of sugar refining. The produce was so equal that neither could be said to have excelled. The manure with the ashes produced 26 tons 7 cwt per acre. and that with the powdered animal carbon 25 tons 16 cwt per acre.

The agriculturists in Wales intend to erect a testimonial to Sir Charles Morgan, Bart., for his exertions in promoting the pursuits of agriculture and breeding of cattle in Wales. It is proposed that a statue should be erected in the new market-place at Newport.

EXHAUSTION OF LAND BY GROWING WHEAT.—To confine ourselves to wheat—it appears from the recent researches of Dr. H. Will that 100 parts of the earthy constituents of the grain consist of—

Potass	22 to 34	parts
Soda	16	„
Lime	2 to 3	„
Magnesia	9 to 13	„
Peroxide of iron	1	„
Phosphoric acid	48	„

A trace of sulphuric acid, silica, and flourine whilst the earthy constituents of wheat straw contain very little phosphoric acid, but a large amount of silica. Now, it is obvious that if the farmer continually restores all the straw to his land, but neglects, from want of knowledge, or means, to replace the earthy matter of the grain, the land will be exhausted, and he cannot continue to grow wheat upon it. Moreover, if he make an effort to maintain the fertility of the land for wheat, he must restore to it every ingredient of which it becomes exhausted by his crop in a proper proportion. To know this proportion essential to the growth of every particular crop, he must have recourse to information supplied by chemistry. One of the earthy constituents of wheat enters so largely into many other crops, that the amount taken off the land everywhere is very great, and constitutes a considerable proportion of the total amount contained in ordinary land, so that the loss has already, even in the present state of science, excited attention, and aroused the efforts of the farmer to repair it. We allude to the phosphoric acid. Now the chemist has shown, that in the bones of animals a great part of this material which has been drawn from land in the growth of vegetables is to be found, stored up in a form suitable for its restoration.

SCARCITY OF GRAIN IN INDIA.—The price of grain has again risen in the Calcutta market. Immediately after the recent inundations, the prices had become extremely exorbitant.— Some days after, the traffic in rice for exportation was suspended, but has since that time been resumed, and the people now are obliged to pay for the *balam* rice which they eat, at a rupee and 14 annas per maund, while there is every prospect of further increase in price to 2 or 2¼ rupees per maund. The price of grain has likewise been enhanced. It cannot be procured under a rupee and 10 annas per maund. Other articles, especially those adapted for exportation, have risen in price. It is difficult to say to what extent suffering and distress may be prevalent among the humbler classes. But still the fall of rain in the commencement of Kartick revived the hopes of good crops. To what then is to be ascribed this scarcity of grain in the market?—*Calcutta Bhashur*, Nov. 4.

MANURES.

Subjoined are the prices of several sorts of of manure:—

Bone dust, 17s. per qr.
Half-inch Bone, 15s. per qr.
Artificial Guano, £9. per ton. 15s. per cwt.
Guano, 10s. to 12s. per cwt., according to quantity.
Rape Dust, £6. to £6. 6s. per ton
Rape Cake, £6. per ton
Gypsum, at the water side, 35s. 0d. per ton; landed and housed, 38s. to 42s. per ton.,
Nitrate of Soda, 16s. 0d. (duty pd.) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Preparation for Turnip Fly 10s. 6d. per packet, sufficient for three acres.
Muriate of Ammonia, 24s. per cwt.